# IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE

# 1996-1997 ANNUAL REPORT

**HAL N. ANDERSON, CHAIRMAN**
**IDAHO DEPARTMENT OF WATER RESOURCES**

## ACKNOWLEDGEMENTS

**About this Report:** This report was produced to satisfy a requirement of Executive Order 96-24 that the Idaho Geographic Information Advisory Committee report its activities. This mandate is not funded, so it is not an easy task to complete. Because of the lateness in compiling the 1996 report and to the extent that many reports and maps in this document report 1997 happenings, it was decided that this report would be the 1996-1997 IGIAC Report.

This report is intended to be a resource and informational document for all who are interested in, or use, mapping technologies. The report was compiled and formatted by Cody Kinney and edited by Tondee P. Clark. Sincere thanks goes out to all members of Idaho's mapping community who contributed to this report; and apologies are offered in advance for any errors or omissions.

**About the Cover:** The cover was designed by Diane Holt, of the Idaho Department of Water Resources, Public Information Section.

*Costs associated with this publication are available from the Geographic Information Section of the Idaho Department of Transportation, 3311 W. State Street, Boise, Idaho 83703, in accordance with Section 60-202, Idaho Code.*

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## CHAIRMAN'S MESSAGE

By Hal N. Anderson

The year 1996 has been a year that can best be described as the "beginning of a transition" for the IGIAC. Since the 1970's, IGIAC has been providing aerial photography and mapping coordination primarily between state and federal agencies. In the late 1980's, IGIAC officially moved into the geospatial data coordination role when the Idaho Mapping Advisory Committee (IMAC) was renamed the Idaho Geographic Information Advisory Committee (IGIAC). However, the basic organizational structure of an unfunded, voluntary membership of "state" agencies, which opened the annual meeting and subcommittee membership to all levels of government and private industry, has not changed.

During the last several years, it has become clear, given the feedback we have received at our annual meetings and my discussion with the mapping technology community throughout Idaho, that the need for a significantly expanded effort of geospatial technology and program coordination is past due.

You will see in this annual report an article on the newly formed state Information Technology Resource Management Council (ITRMC). GIS technologies made the Council's top ten list of important issues they need to address. Because of this, a Council Task Force on GIS was formed. The Task Force will be developing an Idaho Geospatial Technologies plan including organizational recommendations to present to the Council. The Task Force includes representatives from federal, state and local governments, as well as private industry. The goal of the Task Force is to present the plan and recommendations to the Council before the 55th Legislative Session, which will begin in January 1998.

What this all means, at this point, is difficult to tell. I am very optimistic about the future of geospatial technologies in Idaho. Between IGIAC and the Council there is a serious commitment to build a structure for coordination and support that works for all levels of government and industry. The outcome of the current Task Force activity will result in change and even though some of the change will be hard, I am confident it will be for the best. Plainly stated, GIS coordination and support activities in Idaho are not adequate given the value and demand for products the technology generates.

As a community of geospatial technology users, we all need to do what we can and support IGIAC, the Task Force and the Council. IGIAC needs your input, ideas and most of all your support. We will do what we can to keep everyone who is interested informed and welcome your feedback.

## EXECUTIVE SUMMARY

The Idaho Technology Resource Management Council lists GIS Coordination number nine on its list of Top 10 priorities. The Council provided necessary leadership for the successful reissuance of an Executive Order in December 1996 regarding continuance of IGIAC and the Idaho Geographic Information Center (IGIC) (see Appendix A).

With state and federal agencies having access to the Internet, the GIS community has been able to exchange data and information with more ease. While reading this 1996-97 report, you will notice that most reports list a Homepage address where more information can be retrieved.

The ITRMC Homepage: *http://www.state.id.us* is listed under State Agencies, Commissions and Councils and provides minutes, agendas and upcoming meeting notices.

The Digital Data Subcommittee reports that an anonymous ftp site has been established for data distribution at *ftp://ftp.state.id.us*

The Metadata Subcommittee established the Idaho GIS Metadata Server where metadata text files can be queried and accessed. The client HTML page is established temporarily on the INEEL server from the following URLs (to name a few):
*http://www.idwr.state.id.us/idwr/planpol/techserv/resinfo/gis.htm*
*http://www.inel.gov/gis/eris/idaho_wais.html*
*http://www.inel.gov/index.html*

The Global Positioning Systems Subcommittee reports that a Homepage showing the locations of the GPS base stations serving Idaho is located at *http://www.idwr.state.id.us/idwr/support/dpsec/gps/gpssites.htm*
The US Forest Service also lists GPS base stations at *www.fs.fed.us/database/gps/welcome.htm*

The Watershed Subcommittee reported that the draft fifth field coverage was complete. Information about the watershed coverage, criteria used to create the coverage, ftp information and error/enhancement reporting forms may be found at *http://www.idwr.state.id.us/idwr/infotech/main.htm*

The Northern Idaho Geographic Information Advisory Committee reports that Kootenai County is working with GPS technology in order to capture all roads, driveways and all structures throughout the entire county. This GPS data along with their current base layer data will be integrated into a new 911 system. An Internet site which includes numerous data sets has been set up at *www.co.kootenai.id.us* Information about northern Idaho can also be found at the Idaho Panhandle National Forest web page: *www.fs.fed.us/outernet/ipnf/questbook.html*

The U.S. Geological Survey provides an entire list of Internet addresses about product information and software tools, see Appendix F.

The establishment of Internet addresses and the availability of data and information is an important step on the exciting journey of geographic information.

## ABOUT IGIAC

As early as the 1970's, the Idaho Mapping Advisory Council (IMAC) provided a yearly information exchange for state and federal agencies involved in mapping. IMAC also advised the USGS regarding topographic maps that were in greatest need of completion or revision and helped members efficiently plan aerial photography. In 1980, the Idaho Image Analysis Facility was established under Executive Order 80-4; the Department of Water Resources was designated the responsible agency for its operation. The facility provided technical support for agencies interested in remote sensing and GIS programs.

With the rise of computerized geographic information systems and remote sensing, the nature and scope of mapping activities changed. To accurately reflect changes, the executive branch adjusted terminology associated with these activities. Executive Order No. 88-16 changed IMAC to the Idaho Geographic Information Advisory Committee (IGIAC). The order also created the Idaho Geographic Information Center (IGIC) within the Idaho Department of Water Resources (IDWR), to be managed in accordance with IGIAC policies. In 1996, the Executive Order was again modified under leadership from the Information Technology Resource Management Council (ITRMC). The changes provided for the inclusion of IGIAC and IGIC activities within the Council. Voting members for IGIAC are the State of Idaho Departments of Transportation, Water Resources, Fish and Game, Parks and Recreation, and Lands; the Divisions of Environmental Quality and Financial Management and the Tax Commission. Non-voting participation is open to other state and federal agencies, industrial and professional organizations, and academic institutions. The Order allows IGIAC to appoint subcommittees as needed, and requires that IGIAC submit an annual report to the Governor.

IGIAC's responsibilities are to:

1. advise the Governor and the ITRMC on geographic information issues;
2. promote establishment and development of a centralized and coordinated clearinghouse;
3. review new geographic information, mapping, global positioning systems and remote sensing technology applications that might benefit the state's interests;
4. make recommendations to state and federal agencies regarding geographic information systems, mapping programs, global positioning systems and remote sensing;
5. assist in preparation of requests to appropriate federal agencies as a part of the diversified national mapping program; and
6. meet on at least an annual basis to review geographic information programs, and make recommendations for cooperation and resource sharing.

IGIC is directed to:

1. provide necessary coordination and technical support;
2. promote operational applications of digital image analysis and geographic information systems;
3. provide systems management support to ensure proper operation and availability of digital geographically-referenced data for applications by various users;
4. provide technical assistance, in the form of consultation and training, to allow and encourage application of digital mapping techniques and equipment by employees of other agencies and organizations;
5. cooperate with, receive and expend funds from other sources for continued development and utilization of image analysis geographic information techniques;
6. maintain an assessment of geographic information system and image processing capabilities needed within Idaho by existing and potential users; to cooperate with Idaho universities and other research institutions for development and implementation of improved capabilities resulting from research activities;
7. coordinate and cooperate with the state Information Technology Resource Management Council; and
8. as resources permit, provide support to IGIAC and ITRMC, including the establishment and development of a centrally coordinated, spatial data clearinghouse.

# IDAHO TECHNOLOGY RESOURCE MANAGEMENT COUNCIL

By Idaho Department of Administration

The Information Technology Resource Management Council (ITRMC) held its first meeting May 29, 1996, and the paramount order of business was to identify the top "IT" issues facing Idaho state government.

Making the Council's **"Top Ten List"** at number 9 was GIS coordination and the operations of the Geographic Information Center. Other major issues included in order of priority: **1.** Budget and Procurement; **2.** Year 2000; **3.** Electronic Mail; **4.** Internet Access and Security; **5.** Network Consolidation; **6.** Public Safety Communications; **7.** EDI/EBT/EFT (Electronic Data Interchange/Electronic Benefit Transfer/Electronic Fund Transfer); **8.** Data Center Consolidation; **9.** GIS; and **10.** Virtual Database.

The Council is making significant progress in the above major areas in its efforts to maximize the state's IT resources and services, an investment valued at more than $125 million. And, the Council provided the necessary leadership for the successful reissuance of an Executive Order this past December regarding continuance of IGIAC and the Idaho Geographic Information Center, IGIC.

A task force was organized in the summer of 1996 and was chaired by Hal Anderson, Department of Water Resources; and Miles Browne, manager of the ITRMC Project Team. The task force worked to amend the Order, formally presenting its recommendations to the Council. The Council approved the group's short- and long-term recommendations and Governor Phil Batt re-issued a new Executive Order, strengthening GIS coordination and process for the state of Idaho (see Appendix A).

The Council is comprised of the following: **Executive Agency Officers**: Dwight Bower, Department of Transportation, and Linda Caballero, Department of Health and Welfare; **Public Safety Official**: Robert Sobba, Department of Law Enforcement; **Agency Information Systems Manager**: Rob Spofford, Department of Water Resources; **Judiciary**: John Peay; **Elected Officer**: J.D. Williams, State Controller; **State Board of Education**: Darrell Manning; **Superintendent of Public Instruction**: Dr. Anne C. Fox; **Representative of Rural Interests**: Cindy Siddoway, Terreton, Idaho; **Local Government/City and County**: Dan Chadwick, Idaho Association of Counties; **Industry IT Executive**: Raymond Sasso, Jr., Simplot; **Legislative Appointments**, Senator Hal Bunderson, Senator Clint Stennett, Representative John Alexander and Representative Paul Kjellander.

The Council follows the philosophy of a local control, central coordination of information technology and has statutory authority according to HB 661, which passed in the 53rd Idaho Legislature. The Department of Administration implements ITRMC policy pertaining to statewide IT issues.

The ITRMC Project Team, also created as result of HB 661, is charged with assisting state agencies in planning for ways to satisfy their individual information technology needs. The Team, managed by Miles Browne, in collaboration with agency directors and IT personnel, ensures respective agency IT plans fall within the guidelines and policies as recommended in the "Info Tech '96 Task Force Report" and by the Council.

The process of establishing statewide policies and standards governing the use of information technology tools is a very formidable task, according to Council Chair, Pam Ahrens, Director of the Department of Administration.

"IT management is definitely not for the faint of heart," Ahrens says. "Idaho taxpayers are expecting us to develop cost-effective solutions for efficient delivery of government services. It is one task the state of Idaho must accomplish to effectively

use emerging technologies to better leverage our resources and better serve our citizens."

For more information about the ITRMC; official meeting minutes; listing of upcoming meetings and agendas, see the State of Idaho Homepage on the Internet, **http://www.state.id us**. Look for ITRMC listed under State Agencies, Commissions and Councils. The Council also issues a newsletter, Info Tech News, published several times a year. Contact Pat Wynn, ITRMC Project Team, 208-334-5330 or e-mail: pwynn@adm.state.id.us.

# IGIAC MAPPING SURVEY

by Sandy Thiel, Idaho Department of Water Resources

Over the last several years, cartographic and GIS organizations have struggled to maintain a program with limited budgets. At the same time, the need for accurate spatial data has expanded. These trends demonstrate a need for increased efficiency and greater cooperation among state and federal agencies and the private sector.

The Idaho Geographic Information Advisory Committee (IGIAC) leads this cooperative effort establishing a forum which encourages interaction between individuals and groups engaged in mapping and spatial analysis. Initially, IGIAC sent a trial survey to 14 organizations. Each survey included a letter explaining the purpose of the study and request for comments on the contents of the survey. Most of these target groups responded. IGIAC used these comments to improve the clarity of the survey ultimately used in the broad-based mailing.

In March 1996, IGIAC mailed over 200 surveys to groups throughout the state (see Appendix B). Each mailing submitted a three-page questionnaire and a cover letter explaining the purpose of the study. The letter included the name and phone number of the IGIAC contact person. IGIAC entered the responses into a DBase format. Reports may be generated in either DBASE or WordPerfect.

Over 30 percent of those surveyed responded. Of these, 41 percent were engaged in some type of mapping. Forty respondents listed their particular mapping products. Sixteen of the forty listed a second distinct but related product (see Summary of 1996 IGIAC Mapping Survey).

Respondents fall within six categories: 5 private organizations, 10 cities, 4 local entities, 26 counties, 2 state and 2 federal. The local organizations include highway and irrigation districts. Assessor's offices account for most county responses.

Several specific responses warrant mention. The metadata documentation procedure is the standard utilized by federal agencies. The survey included an inquiry addressing metadata (see survey, question 21). Fifteen respondents requested metadata training.

The survey requested information on the respondents use of aerial photography. Twenty-two respondents listed information sources including the U.S. Forest Service, U.S. Geological Survey, Department of Agriculture, American Soil and Conservation Service and other various private organizations.

Many respondents called the IGIAC contact person to request more information about computer mapping. However, several people expressed interest in the survey but stated they lacked the technology to participate in digital data sharing. Many requested information on upgrading their present status.

To a limited degree, the survey already has accomplished the goal of greater efficiency by facilitating communication among the respondents. Moreover, the survey responses disclose the interrelationship between the respondents. For example, the Idaho State Tax Commission provides training to local county assessor's offices. Many counties are working in cooperation with the cities to establish county-wide digital databases. In some instances, the survey generated interest at the city level sufficient to encourage city employees to contact county agencies.

As more organizations make use of the Internet, digital mapping products may find increased usefulness. As the state clearinghouse for GIS data, the Idaho Department of Water Resources, with IGIAC, has a responsibility to encourage cooperation with mapping groups throughout the state. By creating a list of users, the IGIAC can more readily fulfill this

function.  The initial success of this survey and the potential value of a network of users should be rapidly promoted.

This initial GIS users list provides a platform for future information sharing.  Although this is only a first step, further effort should be made to maintain communication throughout the mapping community.

SUMMARY OF 1996 IGIAC SURVEY

| AGENCY | DEPT | DATA BASE MGT SYST | SOFTWARE | TITLE |
|---|---|---|---|---|
| Division of Environ.. Quality | Support Services | Dbase, Info | PC Arc/Info, Arc/info, ldrisi (Graham and Campbell) Leaking Underground Storage Tanks | Idaho Aquifer Mylar Map 1:1m |
| Clearwater County Assor | Same | | Traverse Pe | |
| Shoshone County/ local Government | Assessors Office | | Traverse Fe | Assessor's Plats |
| City of Plummer | City of Plummer | | | City of Plummer |
| Lakes Highway District | Uses Consultant | Acad | | Road System Map |
| Adams County Assor | Adams Co. | | Greenbrier Graphics | Plats |
| Twin Falls Hghwy Dist | None | | | General I highway Map |
| Lewis County Assessor | Assessor | | Traverse PC | Assessor Plat Maps |
| | | | | Assessor Plat Maps |
| Oneida County | Assessors Office | Deed Plotter plus | | Oneida County |
| Payette County | Assessors Office | | Procogo | |
| Valley County | Assessors Office | | Autodesk-Autoced, Windows;Traverse PC | Computer Generated Maps of Entire Valley County hand Drawn Plat Maps |
| City of Ketchum | Planning and Zoning | | Autocad (Engineering Consulting Firm) | Zoning Map of the 1 City of Ketchum Water System City Map |
| City of Rexburg Plans 1"= 500' | | Paradox, IBM36 | | Water, Sewer, Storm Drain Old |
| | | mini Computer | Street Maps Survey Control Maps | |
| City of Moscow | Engineering Dept. | Dbase Not Used for Mapping | Autocad | NAD83 State Plane 1 Coordinate Data City Map |
| Bingham County | Assessors Office | Dbase | Generic Cad 6.0 | Plat Malls |
| East Greenacres Irrigation District | N/A | | Fastcad | District Map V |
| City of Rupert | Public Works Dept. | Oracle | | City Maps (Utility) |
| City of Priest River | Build/Planning Dept. | Unknown | Design Cad 2d (Windows) | |
| City of Kuna | Planning and Zoning | Ada County Maintained | ArcView | |
| Ada County Assors Office | Land Records Super. | Db2; Info | ARC/Info 7.0.4 | Ada County Base M Ada Co. Street Centerline C |
| Jerome County | Assessor's Office | | Traverse PC | |
| Latah County Assessor | Survey/Mapping/Draft | | Autocad and Traverse PC | Assessor's Parcel Maps |
| Idaho County Assessor | Mapping Dept | | Traverse PC | Township Maps |
| Caribou County | Assessor's Office | | Traverse PC | Parcel Maps |
| Canyon County Assessor | Mapping | Dbase | Autocad l2, DCA Cogo, PC ArcInfo, ArcView | Parcel Maps in Progress Comp Map A |
| Camas County | Assessor | | | |
| Jefferson County | Assessor | | Assessor Hand Drawn Maps | 1" = 200' |

| AGENCY | DEPT | DATA BASE | SOFTWARE MGT SYST | TITLE | SOURCE/DATE | SCALE |
|---|---|---|---|---|---|---|
| Intermountain Technologies | | | Unix Custom Software | | | Thermal/Nitrate/Growth |
| Bonneville County | Map Dept./Assessor | | Oracle | Intergraph, Cogo Works | | Mapping Dept/Bonneville County Assessor |
| Boise County | Assessor's Office | | IBM AS4OO, Tax Comm File Data Base | Traverse PC | | Drafting Technician |
| Kootenai County | Assessor's Office | | Mapping Department | Mini Reality; PC Dbase | | Autocad, ArcCad, Softdesk Cogo, ArcView |
| Sandpoint Planning Dept. | | | Design Cad for Windows | Design Cad | | Sandpoint Base Map |
| City of Pocatello | GIS | | ArcInfo | Arc Info | | Aerial Planimetrics |
| Burlev Irrigation District | | | Foxbase, ArcView | ArcView and Arcinfo | | Digital and Parcel Contour/Digital |
| Intermountain Gas Company Grid | Distribution Dept. USGS Nad27 | | Sybase 1"= 100' | Xerox Utility Information System | | Gas Pipeline Plan View- |

| | | | | |
|---|---|---|---|---|
| Dept. of Interior BLM | GIS Team | Info, Oracle, dBase | ArcInfo, ERDAS, Moss, ADS | Gas pipeline Plan View-Key 7.5 Digital Base Data for All USGS/CFF layers |
| Sawtooth National Forest | IS/GIS | Oracle | ArcInfo, ArcView | Cartographic Feature File |
| Boundary County Planing and Zoning | | | Boundary County Planning Map | March 1980 |
| City of Post Falls | | Engineering Dept. | MS Excel 5.0, Autocad V. 12 (Windows) | City Street and Zoning Map |
| Current 1,000 | | | | |
| Benewah County | Assessor's Office | Traverse PC | | 1"=20' |
| Adams County | Assessor's Office | | Greenbriar Graphics | |
| Cassia County | Assessor's Office | | Greenbriar Graphics/Deed Plotter + | |
| Gem County | Assessor's Office | AS400 | | |
| Brown and Caldwell | Environmental Engineers | | Autocad | |
| Welch commer and Assoc. | | Microsoft Office | Autocad Softdesk 57 | |
| Aerial Mapping | | ERDAS, ARCInfo | | |

**1996 IGIAC VOTING MEMBER MEETINGS**

IGIAC voting members meet as needed to discuss and decide issues. In 1996, IGIAC members met six times, in addition to the annual meeting. Dates and subject of each meeting follow:

March 7, 1996: Debriefing and Work Tasks Resulting from Annual Meeting
- NSDI Grant, Progress Report
- Info Tech 96 and Spatial Data
- IGIAC Executive Order
- FGDC Partnership Agreement
- Annual Report for 1995
- GIS and Mapping Planned for 1996

April 10, 1996: IGIAC Executive Order
- Idaho Data Clearinghouse
- FGDC AND NSGIC Partnership Agreement
- IGIAC Annual Report for 1995
- 1996 IGIAC Annual Meeting

May 8, 1996: Annual Report Including Recommendations
- Clearinghouse
- Executive Order
- FGDC Cooperative Agreement

June 6, 1996: Annual Report
- Annual Meeting
- ITRMC Issues

August 15, 1996: Annual Report
- ITRMC and Executive Order
- Annual Meeting
- DRG's
- GPS Subcommittee
- Metadata Subcommittee and NSDI Grant
- NSGIC Annual Meeting

September 19, 1996: ITRMC GIS Executive Order Subcommittee Update
- U.S. Geological DRG and Digital Ortho's Program
- Develop an Agenda for IGIAC Annual Meeting
- Annual Report
- NSGIC Annual Meeting Report

## 1996 IGIAC ANNUAL MEETING AGENDA

The annual meeting was held November 5 and 6, 1996, at the National Interagency Fire Center Training Auditorium in Boise. Eighty-four people attended the two-day annual meeting (see Appendix C). Here is the agenda:

Tuesday, November 7:

| | |
|---|---|
| 8:30 a.m. | Welcome and Introductions |
| 9:00 a.m. | Digital Raster Graphics - USGS |
| 10:00 a.m. | Break |
| 10:30 a.m. | Framework - What Is It and How Will It Affect Me - USGS |
| 12:00 p.m. | Lunch |
| 1:30 p.m. | Agency Reports:<br>Federal<br>State<br>Tribal<br>County<br>City<br>Industry |
| 5:00 p.m. | Adjourn |

Wednesday, November 8:

| | |
|---|---|
| 8:30 a.m. | Committee Reports:<br>North Idaho<br>GPS<br>East Idaho<br>1:24K<br>Metadata<br>URISA Chapter |
| 10:00 a.m. | Break |
| 10:30 a.m. | Space Imaging - Presentation by Space Imaging Inc. on Future Satellite Data Products |
| 12:00 p.m. | Lunch |
| 1:30 p.m. | Facilitated Brainstorming Session on GIS Coordination Strategy, Including Clearinghouse and Framework Data Layers (see Appendix D) |
| 3:00 p.m. | Break |
| 3:30 p.m. | Idaho Departments of Lands and Water Resources Demo* |
| 5:00 p.m. | Adjourn |

* Demo's also to include GIS on Internet and Foothills Flood work.

## 1996 IGIAC SUBCOMMITTEES

IGIAC has six subcommittees that focus on specific topics and areas of interest. They are:

1. Digital Data Subcommittee, concerned with digital mapping, from USGS DLGs, U.S. Forest Service CFFs, and other sources, chaired during 1996 by Tony Morse;
2. Metadata Subcommittee, concerned with developing metadata--data about data--standards for Idaho, and with documenting differences between the Idaho standards and the emerging federal standards, chaired during 1996 by Bob Harmon and Luke White;
3. GPS Subcommittee, focused on applications and technology of global positioning systems, and on developing standards for acquiring and exchanging this data, chaired during 1996 by John Courtright;
4. Watershed Subcommittee, formed to create a common watershed boundary delineation for use by state, federal and local governments, and by private industry, in managing natural resources, chaired by Hal Anderson;
5. Eastern Idaho Subcommittee, providing a meeting point for mappers in the Pocatello-Idaho Falls-Eastern Idaho region, who cannot attend IGIAC meeting in Boise, chaired during 1996 by Dennis Hill; and
6. Northern Idaho Subcommittee, providing the same function for mappers in the Coeur d'Alene-North Idaho region, chaired during 1996 by Randall Sounhein.

## DIGITAL DATA SUBCOMMITTEE

by Tony Morse, Idaho Department of Water Resources

The biggest development in the digital data realm has been the establishment of a state anonymous ftp site for data distribution. The site holds about 2.4 GB of data from IDWR, and flood plain data from FEMA for 16 Idaho counties. The Department of Lands has put a disk on the site, and has started to populate it with their data. The ftp site is a data-distribution medium that will relieve state agencies of nearly all the work involved in data distribution while at the same time improving the public's access. All agencies are encouraged to take advantage of the resource. Contact Ben Britton at IDWR (208-327-5447) to make arrangements. The ftp site address is *ftp://ftp.state.id.us*

Other progress on the digital data front is described in the reports from individual agencies.

# METADATA SUBCOMMITTEE

By Luke J. White, Lockheed Idaho Technologies Company and
Robert Harmon, formerly of the Idaho Department of Water Resources

## 1995/1996 NSDI CCAP Grant Work

The Metadata Subcommittee spent much of 1996 continuing to work on the NSDI CCAP (National Spatial Data Infrastructure Competitive Cooperative Agreements Program) grant. A final report of the work was written in early 1997 and submitted to the FGDC (Federal Geographic Data Committee).

## IGIAC WAIS Server Node

Luke White and Julie Brizzee, Lockheed Idaho Technologies Company, set up the Idaho GIS Metadata Server on the Internet where metadata files can be queried and accessed. The client HTML page is established temporarily on the INEEL server from the following URLs (to name a few):
http://www.idwr.state.id.usidwr/planepol/techserv/resinfo/gis.htm http://www.inel.gov/gis/eris/idaho_wais.html
*http://www.inel.gov/index.html*

## Existing Dataset Conversion

In early 1996, the IGIAC mailed out a three-page questionnaire to 211 geospatial data users in Idaho (see Sandy Thiel's report in this document). Respondents were informed of the subcommittee's efforts to create metadata and access to it on the Internet through a WAIS server. They were also asked if members of the subcommittee would create metadata from their geospatial data holdings. Sixty-two responded and the data were used to create a preliminary invitation list for the contributor training workshops held last fall. From the respondents, 15 were interested in having their geospatial data holdings documented.

## Contributor Training

Three workshops were held at the Idaho Department of Transportation in September with approximately 30 people in attendance. Luke, Julie and Bob developed and carried out the training with the invaluable assistance of the Department of Transportation. Bob and Luke held an afternoon workshop at the IGIAC Annual Meeting in November.

## Reporting and Technical Coordination

The last requirement of the NSDI CCAP grant was to report on the progress and results of the grant work. Luke, Julie and Bob have given presentations on the 1995/1996 grant at the following venues: IGIAC annual meetings, 1995 and 1996; Northwest ARC/Info User Conference, October 1996; Northern Rockies URISA meeting in Boise, January 1996.

## Work for 1998

The IGIAC Metadata Subcommittee will be moving to an Internet-based teleconference format shortly after the end of Fiscal Year 1997. A node is being created on the Internet to support ongoing Metadata Standards work. If you have an interest in participating in this teleconference, e-mail your request to *wlj@inel.gov*, and you will be added to the list. (Sorry, if you are already on the subcommittee, you will be added automatically. Can't get out of it.)

## Summary

The IGIAC Metadata Subcommittee met on a monthly basis throughout 1996 with an average of a dozen or so participants at each meeting. As of this writing (7/97), Bob Harmon is working in Oregon. He gives his sincerest thanks to the people on the subcommittee that attended the meetings and worked on the NSDI CCAP grant. It would not have been possible without their participation. Thank you.

# GLOBAL POSITIONING SYSTEMS SUBCOMMITTEE ANNUAL REPORT

By John Courtright, Idaho Division of Environmental Quality

The Global Positioning Systems (GPS) Subcommittee held two meetings in 1996, one on March 27 and again on October 25.

At the March meeting, we had 17 individuals in attendance and heard updates about the following:

**Trimble Software:** Joan Appell of Electronic Data Solutions told about a new version of Pfinder coming out called Pfinder Office and that it was MS Windows compliant. She also discussed some of the ongoing firmware upgrades that individuals should be aware of.

**RINEX:** Attendees had a lengthy discussion about Receiver Independent Exchange (RINEX) capabilities. At the time, RINEX was still not working very well and individuals were attempting to use base station data from various sources to differentially correct their data. It was very clear that the manufacturers were not interested in supporting RINEX and that we felt we needed a way to force some RINEX compatibility. It was agreed that we needed a position paper for the state and federal agencies which stated that if GPS receivers were purchased they must comply with the current RINEX standards. Mike Coffey of the Payette National Forest in McCall agreed to write the paper which he then presented at the September meeting. Since this time, the RINEX II standards have been developed and appear to have been adopted by the manufacturers which has helped to make more data available across GPS manufacturers.

**GPS Base Station Availability:** Two more Trimble base stations have been added, one by the U.S. Forest Service in Idaho City, and another by the U.S. Bureau of Reclamation in Burley, Idaho. These two sites are fully operational and contribute to the GPS base station network serving Idaho.

**PLGR Receivers:** We were able to see one of the new PLGR receivers available only to the federal agencies. These receivers have military encryption imbedded in the receiver to eliminate the effect of selective availability. These receivers are usually considered 15-meter accuracy receivers, however some of the users are reporting much better accuracy. State agencies are prohibited from purchasing or even using the receivers.

**GPS Training:** Finally, we discussed the need for GPS training to help increase knowledge of its use. Time ran out and it was agreed that we would continue discussing this topic at the fall meeting.

At our October meeting, we had 18 individuals in attendance and we discussed the following:

**GPS Equipment:** Joan Appell spoke about some of the new GPS receivers coming out with built in beacon capability. This would be useful if we had an operational CORS station broadcasting a signal. At the time, none were planned for Idaho.

**Precision Farming:** Curt Pengelly of Simplot Soilbuilders spoke about the use of GPS in precision farming. This is a rapidly expanding field for the use of GPS and is used for everything from soil sampling to fertilizer spreading on the fields.

**Idaho Base Station:** It has been decided that the U.S. Forest Service's base stations in McCall and Idaho City would remain BBS sites and not move to the Internet. The U.S. Forest Service sites in Missoula, Montana and Kettle Falls, Washington were on the Internet and worked well for downloads. The BLM site in Shoshone was planned to become an Internet site sometime in the future. The Idaho Transportation Department said that their NovAtel site in New Meadows was operational, but would require the collection of RINEX data which was not yet available. The Idaho Transportation Department, the Division of Environmental Quality and the Idaho Department of Water Resources were jointly cooperating to update the ITD base station and make it available on the Internet. A proposal was developed, yet due to factors beyond control, the three agencies were never able to finalize an agreement. The IGIAC GPS Subcommittee has now established a Homepage on the Internet. This shows the locations of the GPS base stations serving Idaho, the address is: *http://www.idwr.state.id.us/idwr/support/dpsec/gps/gpssites.htm*. Other base stations will be added to the Homepage as time permits.

**Rinex:** We discussed the RINEX letter written by Mike Coffey and decided it would need a little more work and would then be sent on to the IGIAC committee for review.
**RPS Training:** Everyone agreed that there needed to be some GPS training available and the consensus was that the best source of training would be from the private sector. It was suggested that this committee locate other sources of GPS training on the Internet and include that information on the GPS Homepage. This would provide additional sources of training. (At present, there is no webmaster for a GPS Homepage so there is little maintenance being performed on the site.)

Table 1 lists a directory of agencies and contacts of GPS users. Table 2 lists the names, locations, and contact information for the GPS base stations serving Idaho. Most all of the base station operators provide their data free of charge over the Internet or a BBS.

Appendix E provides IGIAC GPS Subcommittee Guidelines for Resource Grade GPS Coordinate Accuracy and Recordation Form.

**TABLE 1. GLOBAL POSITIONING SYSTEMS IDAHO USERS**

| ROVER MAKE | BASE STATION | AGENCY | CITY | CONTACT | PHONE |
|---|---|---|---|---|---|
| Trimble | ACHD | Ada County Highway District | Boise | Dorrell Hansen | 345-7680 |
| Rockwell- PLGR | | Agricultural Research Service | Boise | Mark Seyfried | 422-0715 |
| Trimble | McC/IdC | Boise National Forest | Boise | Darrel Van Buren | 373-4147 |
| Rockwell- PLGR | | Bureau of Reclamation | Boise | Jim Doty | 378-5272 |
| Trimble | BLM | Bureau of Land Management | Boise | Tim Geary | 373-3983 |
| Trimble | ANG | Id. Army National Guard | Boise | Nick Nydegger | 422-4182 |
| Trimble | McC | Id. Conservation Data Center | Boise | Bob Moseley | 334-3402 |
| Trimble | IdC/BLM | Id. Dept. of Water Resources | Boise | Ken Neely | 327-5455 |
| Trimble | McC/IdC | Id. Div. of Environmental Quality | Boise | John Courtright | 373-0271 |
| NovAtel | ITD | Id. Transportation Dept. | Boise | Ron Cole | 334-8222 |
| Trimble | BLM/McC | Idaho Power | Boise | Mark Druss | 383-2925 |
| Magellan, Rockwell-PLGR | | U.S. Geological Survey | Boise | Charles Berenbrock | 387-1303 |
| Rockwell-PLGR, Garmin | | U.S. Natural Resources Conservation Service | Boise | Dave Hoover | 378-5785 |
| Trimble | Ketl/Mis | Id. Dept. of Lands | Coeur d'Alene | Larry Morrison | 769-1525 |
| Trimble | Ashteck | Kootenai County | Coeur d'Alene | Bruce Anderson | 769-4463 |
| Trimble | Mis | Panhandle National Forest | Coeur d'Alene | Dwight Makinson | 765-7427 |
| Trimble | Mis/McC | The Nature Conservancy | Deary | Janice Hill | 877-1179 |
| Trimble | Mis/McC | Nez Perce National Forest | Grangeville | Daryl Mullinix | 983-1950 |
| Trimble | KE | Kootenia Electric | Hayden | Art Malin | 765-1200 |
| Trimble | INEL | Id. National Engineering Lab | Idaho Falls | Ron Rope | 526-9491 |
| Custom | | NOAA | Idaho Falls | Randy Johnson | 526-2129 |
| Trimble | McC | Nez Perce Tribe | Lapwai | Jack Bell | 843-2253 |
| Trimble | McC | Id. Fish & Game Department | Lewiston | Frances Cassirer | 799-5010 |
| Trimble | Ketl/Mis | Potlatch Corporation | Lewiston | Dennis Murphy | 799-1156 |
| Trimble | McC | Payette National Forest | McCall | Mike Coffey | 634-0649 |
| Trimble | NwM | Northwest Management | Moscow | Vaiden Bloch | 883-4488 |
| Trimble | Ketl/Mis | University of Idaho | Moscow | Larry Lass | 885-7802 |
| Trimble | Ketl/KE | Coeur d'Alene Tribe | Plummer | Frank Roberts | 686-5307 |
| Trimble | INEL | Bannock County Weed Control | Pocatello | Tracey Holbrook | 234-4139 |
| Magellan | ISU | Idaho State University | Pocatello | Chuck Peterson | 236-3922 |
| Trimble | Mis/McC | Clearwater National Forest | Orofino | Steve Stabb | 476-4541 |

## TABLE 2. BASE STATIONS SERVING IDAHO

**TRIMBLE BASE STATIONS**

| Name | Agency | Method of Distribution | City State | Contact Person | Contact Phone |
|---|---|---|---|---|---|
| ACHD | Ada County Highway Dist. | BBS | Boise, ID | Dorrell Hansen | 345-7680 |
| ANG | Army National Guard | BBS | Boise, ID | Nick Nydegger | 422-4182 |
| BLM | Bureau of Land Management | Internet | Shoshone, ID | Tim Geary | 373-3983 |
| BOR | Bureau of Reclamation | Internet | Burley, ID | Donna Fornshell | 334-9001 |
| IdC | U.S. Forest Service | BBS | Idaho City, ID | Dave Woras | 392-6681 |
| INEL | ID National Engineering Lab | Internet | Idaho Falls, ID | Ron Rope | 526-9491 |
| ISU | Idaho State University | Call | Pocatello, ID | Chuck Peterson | 236-3922 |
| Jac | U.S. Forest Service | BBS | Jackson, WY | Brad Bridges | (307)739-5588 |
| KE | Kootenai Electric | Internet | Hayden, ID | Art Malin | 765-1200 |
| Ketl | U.S. Forest Service | BBS/Internet | Kettle Falls, WA | Mike Picard | (509)738-7700 |
| Mis | U.S. Forest Service | BBS/Internet | Missoula, MT | Don Patterson | (406)329-3430 |
| McC | U.S. Forest Service | BBS | McCall, ID | Mike Coffey | 634-0649 |
| MCS | Missoula County Surveyor | BBS | Missoula, MT | Steve Niday | (406)523-4870 |
| NwM | Northwest Management | BBS | Moscow, ID | Vaiden Bloch | 883-4488 |
| WWP | Washington Water & Power | Call | Spokane, WA | Bud Belles | (509)994-7553 |

**NOVATEL BASE STATIONS**

| Name | Agency | Method of Distribution | City State | Contact Person | Contact Phone |
|---|---|---|---|---|---|
| ITD | Idaho Transportation Dept. | Diskette | Coeur d'Alene, New Meadows, ID | Shoshone, Rigby, Ron Cole | 334-8222 |

Best WWW Homepage for the locations of GPS Base Stations is US Forest Service @ www.fs.fed.us/database/gps/welcome.htm

## WATERSHED SUBCOMMITTEE

By Linda Davis, Idaho Department of Water Resources

There were no Watershed Subcommittee meetings between November 1995 and November 1996. At the IGIAC Annual meeting, we informed the IGIAC members about the draft fifth field watershed coverage. Also at the annual meeting the criteria used to create the coverage was presented. All interested parties were encouraged to review the coverage and submit any recommended enhancements or report any errors. Information about the watershed coverage, criteria used to create the coverage, ftp information and error/enhancement reporting forms may be found at *http://www.idwr.state.id.us/idwr/infotech/main.htm*.

Representatives from the Idaho Department of Water Resources met with the U.S. Forest Service Water Coordinator for Region 1, Ann Puffer, in June of 1996 to discuss changes recommended by the Northern Idaho Forests. Hydrologists and GIS coordinators from the Nez Perce, Panhandle and Clearwater National Forests discussed current boundaries and recommended changes and criteria used to create the boundaries. The Forest Service personnel were going to draft recommended changes on mylars, digitize new lines and submit the changes in Arc/Info coverages. The Payette National Forest submitted refined fifth field lines for the Payette National Forest.

## NORTHERN IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE

By Randall Sounhein, formerly with Panhandle Health District

In December 1996, the Panhandle Health District (PHD) completed their GIS contractual work with Bonner County. Panhandle Health District created a number of coverages, which the county needed for mapping efforts related to their Comprehensive Plan. The county now has a good stable base platform with which future mapping can be integrated.

I left PHD in February 1997 to take the job as GIS Coordinator for the State of Oregon's Division of State Lands in Salem, Oregon. It has been a pleasure working with IGIAC and I wish Hal and the rest of you all the best in the future.

Kootenai County is currently in the process of contracting out their 911 system. No word as whom the likely candidate will be. They are currently working with GPS technology in order to capture all roads, driveways and all structures throughout the entire county. This GPS data along with their current base layer data will all be integrated into the 911 system. They have also set up an Internet site (*www.co.kootenai.id.us*) which has numerous data sets in compressed (zip) format. They have also contracted with the City of Coeur d'Alene to establish a seamless base map within the city's boundary. Bruce Anderson, Kootenai County surveyor, has established a central GPS county-wide control network which also integrates surrounding counties.

The Idaho Panhandle National Forest has created a new web page (*www.fs.fed.us/outernet/ipnf/questbook.html*). They are working on completing their vegetative cover layer (stands) for the entire forest. The watershed delineation layer should be complete by October 1997. Their current road and forest boundary coverage should be completed in the near future. Their road network coverage is ongoing.

## SOUTHEAST IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE

By Dennis Hill, City of Pocatello

A meeting of the Southeast Idaho Geographic Information Advisory Committee was held on July 17, 1997, in Pocatello. Thirty attendees, ranging from Rexburg to Twin Falls, were present to network and learn more about what their colleagues were doing. The itinerary was as follows:

> 10:00 a.m. Terry Bartlett spent several hours demonstrating the new software line from ERSI, and discussing where he felt the industry is headed.
>
> 1:00 p.m. Dick Dorwart P.E. with ITX/Stanley demonstrated an infrastructure management system and how it integrates with GIS. This application was of particular interest to those who are primarily concerned with public works.
>
> 3:00 p.m. Ryan Pierson from Electronic Data Solutions was present to demonstrate Trimble's Pathfinder Office software. This new software product has greatly improved the previous product used to differentially correct GPS data. We then discussed the possibility of a beacon being located in the Twin Falls area providing RTK for the area, including Southeast Idaho.

We have tentatively set an early November date for the next meeting, possibly in the Idaho Falls area.

**URBAN AND REGIONAL INFORMATION SYSTEMS ASSOCIATION**
**NORTHERN ROCKIES CHAPTER**

By Andy Little, Past President, Power Engineers

The 1996-1997 year for the local chapter of the Urban and Regional Information Systems Association (URISA) was filled with several activities relating to both local and regional GIS issues and people. A newsletter is published two to four times per year. This form of communication is sometimes the only way that members keep in contact and hear about chapter happenings. The Rocky Mountain Chapter is around five years old and evolved from a local users group centered in Ada County. A sincere attempt has been made to include people from around the state, particularly students in the higher education system in Idaho. Meetings do not follow a regular structure from year to year. This past year the primary focus has been around the annual conference. This conference was held with the state users group from Montana and was a big success and a lot of fun. The location of this year's conference was Bozeman, Montana, next year it will be in Butte, Montana,
with the following year probably hosted by the City of Idaho Falls, Idaho.

For information concerning the URISA organization, please contact one of the 1996-1997 officers listed below. I will include some bits from past newsletters at this point.

Chapter Status - Fall 1996
The installation of new officers occurred at the last chapter meeting on August 28. The following officers were installed: Andy Little - President, Sandy Samson - Vice President, Janet Cheney - Secretary, Nickie Duff - Treasurer, Board members - Louden Standford, Julie Brizzee, Jim Hetherington and Dennis Hill - Past President/Board member.

New officers are elected into the secretary and treasurer positions each year (July - June) along with new board members. The president and vice-president move up each year, the past president remains on the Board for a one-year period of time. At the first Board meeting, the following agenda and items were discussed. Treasurer's report - we currently have a bank balance of $7,158.87, this will be utilized for mailings and for seed money for future events and conferences.

Chapter Status - Summer 1997
Idaho/Montana 1997 Conference - The conference was held this year in Bozeman, Montana. It was titled the "Ninth Annual Montana User's Group Conference." Attendance was around 400 people (just a little bigger than one of our meetings). Idaho people consisted of around 85, and were represented from the entire state.

The Rockie Mountain Chapter focused on sponsoring university students (ten), presenting papers, conference volunteering, and generally participating in all conference and extra curricular activities. To the many who helped, a big thank you! We can always use help on these conferences.

**IDAHO GEOGRAPHIC INFORMATION CENTER**
**IDAHO DEPARTMENT OF WATER RESOURCES**
**1996/1997**

By Tony Morse, Department of Water Resources

Some of the projects IGIC worked on in 1996/1997:

The Boise Valley Project

This is a long-term cooperative project with the U.S. Bureau of Reclamation (BOR). The goal is to map the change in irrigated agriculture between 1939 and 1994. The general thrust of the project has been modified to include 1939 photography rather than the original 1915 plat maps in order to get more complete coverage of the valley. The aerial photography from both 1939 and 1994 is being scanned, map-registered, mosaicked, and interpreted for land use and land cover. Polygon boundaries are being drawn on-screen over the mosaicked photography to generated coverages.

The Payette Valley Project

Color infrared aerial photos were flown of the Payette Valley below Black Canyon at the end of July, 1997. These photos, at 1:24,000-scale, will be used in the Payette Valley to map land use and land cover. The project is an extension of the Boise Valley Project, and is also a cooperative project with BOR.

Adjudication ARCView Pilot Project

IGIC personnel put together a pilot project illustrating the way GIS could be used to manage data for the Snake River Adjudication. T8SR22E in Minidoka County was chosen for the demonstration. The data used included scanned and map-registered NAPP photography, a Landsat TM image, the U.S. Bureau of Land Management's (BLM) GCDB (provided by the Department of Lands), the Adjudication claim data, and tax parcels (provided by the Minidoka County Assessor's office and the Tax Commission). Based on the pilot, the Adjudication made a full commitment to GIS (see the item below).

FGDC Framework Grant

IGIC and the Department of Fish and Game, have been awarded a grant by the Federal Geographic Data Committee for Framework Demonstration. The main tasks covered by this grant are addition of 1:100,000-scale hydrography attributes to the 24,000-scale hydrography, and the addition of missing canals to the 1:24,000 data. This work will be done for the Boise HUC below Lucky Peak, and will serve as a pilot to assess the resources needed to accomplish these tasks for the whole state. Work is scheduled to start December 1, 1997.

NSDI Benefits Grant

IGIC, the U.S. Geological Survey, Water Resources Division and the Henry's Fork Foundation have been awarded a grant by the FGDC to develop a suite of Internet-based GIS applications. The applications will run on an NT server at IDWR, and be invoked by anyone with Internet access and a web browser. The purpose of the work is to give citizen groups better access to the data that supports the comprehensive planning process at IDWR. Work is scheduled to start October 1, 1997.

Ownership Update

IGIC personnel are in the process of updating ownership. The IGIC ownership is a digital version of the BLM's 1:100,000-scale Land Status Maps. The attributes have been updated, but the real work will be incorporating the GCDB line work. Personnel are testing alternative methods of incorporating the 1:100,000-scale attributes into the GCDB linework.

Water Bodies

IGIC generated statewide water-body coding based on the 1:100,000-scale hydrography. This work was done for the Idaho Division of Environmental Quality.

Boise 2000 ARCView Project

Boise 2000 is a project to inventory and update irrigation diversions along the Boise River. The data were originally compiled by a local engineering company, which delivered an extensive dataset as bound hardcopy and on CD. IGIC personnel reformatted the data and added other data to create an ARCView application. The application has been presented to interested local groups.

The Adjudication

The Adjudication Bureau has made a commitment to using GIS, specifically ARC/INFO. This commitment has three important results: 1) Mike Ciscell has returned to IDWR as the Adjudication Senior GIS Analyst; 2) all adjudication claims are being captured as shape files; and 3) the Adjudication is paying counties in the Snake River Basin to convert their tax parcels to digital form.

Personnel Changes

Changes in personnel are inevitable. Several staff changes have occurred recently. Tana Dace left to stay at home with her child. Jessica Larsen left Albertson's for Tana's job. As previously noted, Mike Ciscell returned to IDWR after eight years as GIS supervisor at the Oregon Water Resources Department (OWRD). OWRD, in an act of grim revenge, hired Bob Harmon to fill Mike's vacant position. Linda Davis was promoted to fill Bob's empty position, and James Oakleaf left the Wyoming Water Resources Center to fill Linda's position. Chris Cowling left to pursue a career in law enforcement, and was replaced by Dan Kerr, who came here from Hewlett Packard. Terra Frei left to become a full-time teacher, and Genna Ashley went to the Boise Project Board of Control to start-up their GIS program.

ARCView Training

Bob Harmon's departure left IDWR without an ESRI-certified ARCView instructor. To take up the slack, Mike Verdun applied for and was granted certification.

FTP Site

IGIC has put approximately 2.42 GB of data on the ftp site. The Federal Emergency Management Administration (FEMA) has a directory on the site containing FEMA floodplain data for 19 Idaho counties. The ftp site can be accessed over the Internet at *ftp://ftp.state.id.us*

# IDAHO STATE TAX COMMISSION

## Local Government News

In local government news, we at the Idaho State Tax Commission have seen a dramatic increase in the number of counties either exploring the development of an automated mapping (AM) system or in actually capturing data.

In an effort to meet this rapidly growing demand for assistance, the Idaho State Tax Commission has formed a technical subcommittee to serve in an advisory capacity to the Idaho Association of County Assessors Mapping Committee.

The first goal of the subcommittee was to develop a set of data standards and guidelines for both the Computer Aided Drafting (CAD) model as well as the GIS model. These guidelines address such issues as minimum PC and peripheral hardware considerations, software, data capture methodologies, database design and/or attribute or layering schemes and so forth.

This effort has also exposed a need for education. The Idaho State Tax Commission's County Support Division has long been responsible for providing Assessors and their staff continuing education in mapping concepts. This education will now expand to include courses designed to teach terminology and other key concepts relating to AM and/or GIS. These classes will also include software or vendor specific training to be offered both on-site as well as on a regional basis.

In short, the State of Idaho is well poised for what is quickly amounting to be the development of a comprehensive, statewide, high resolution, parcel based Land Information System (LIS).

## Tax Code Area Geographic Database

The Idaho State Tax Commission has nearly completed a statewide Tax Code Area geographic database available or referenced by county. Arc/Info's regions capabilities has proved to be an excellent method by which to capture, maintain and edit changes to taxing districts.

The Idaho State Tax Commission dedicated a large portion of 1996 in cooperatively assisting the Idaho Department of Lands in the development of two very important geospatial databases. The first, The Geographic Coordinate Data Base (GCDB) has been converted from its native ASCII format (as produced and maintained by the BLM) to an Arc/Info coverage format complete with polygon, arc and node attributes extracted from the raw data files.

Another key dataset is the continued development and subsequent QA/QC of a statewide 1:24000 scale database. Again, the Idaho State Tax Commission and the Idaho Department of Lands have worked cooperatively to convert both DLG and CFF data into a seamless database comprised of up to nine layers of thematic data per 7.5 quadrangle. Each layer of information contains a four digit feature based code which is then linked to both a LUT and a corresponding line and/or symbology set for cartographic output.

# GEOGRAPHIC COORDINATE DATABASE (GCDB)

U.S. Bureau of Land Management

The Geographic Coordinate Data Base (GCDB) project has ended and is now a part of the Cadastral Survey program. A five-year GCDB data collection plan (fiscal years 1997-2001) has been developed for completion of all remaining townships, regardless of their complexity. This plan will possibly provide impetus towards future funding of GCDB data collection within the Cadastral Survey program. A dedicated GCDB operations and maintenance (O&M) effort will begin in the fiscal year 2002. GCDB data, including Idaho GCDB Users Guide, will tentatively be made available on the Internet sometime in August or September of 1997. An updated map that shows the collection status of all townships in Idaho (current to July 3, 1997) is provided.

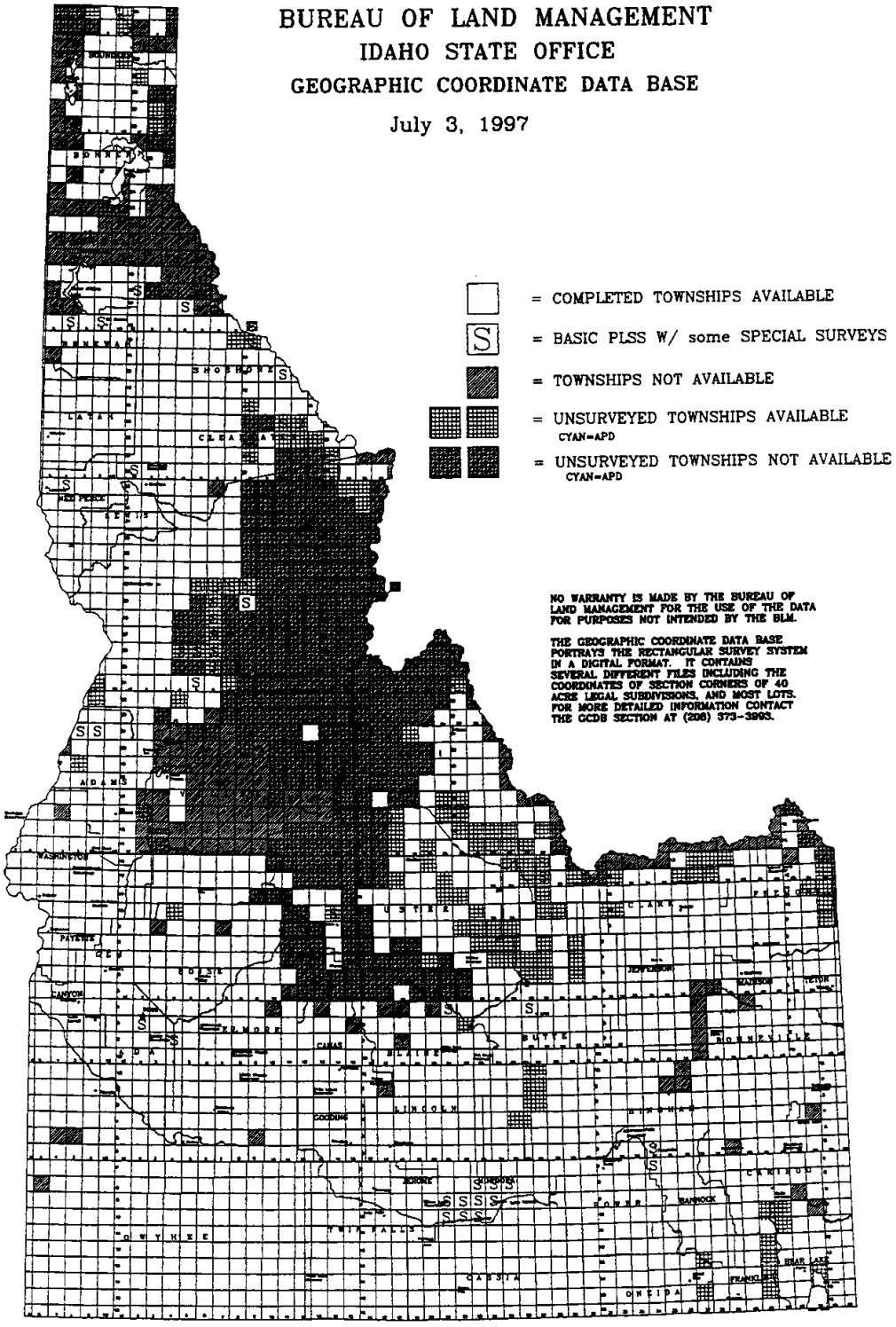
GCDB Digital Plats

The Idaho Department of Lands (IDL), U.S. Bureau of Land Management, and the State Tax Commission are cooperating to produce digital plats from GCDB data. As the data is received from the BLM, ARC/INFO coverages are generated and topology built by IDL personnel. The Tax Commission then performs quality control and post-processing to ensure the township platting is correct and sections are attributed correctly. They then assign lot numbers and lot acreages to the attribute table. The Tax Commission will then distribute the plats to the counties, which want to use them for cadastral control. Once the township has been processed, IDL is attributing state owned land with surface and mineral status to the township plat.

The cooperation among the agencies is another excellent example of different agencies pooling resources and expertise to produce a product.

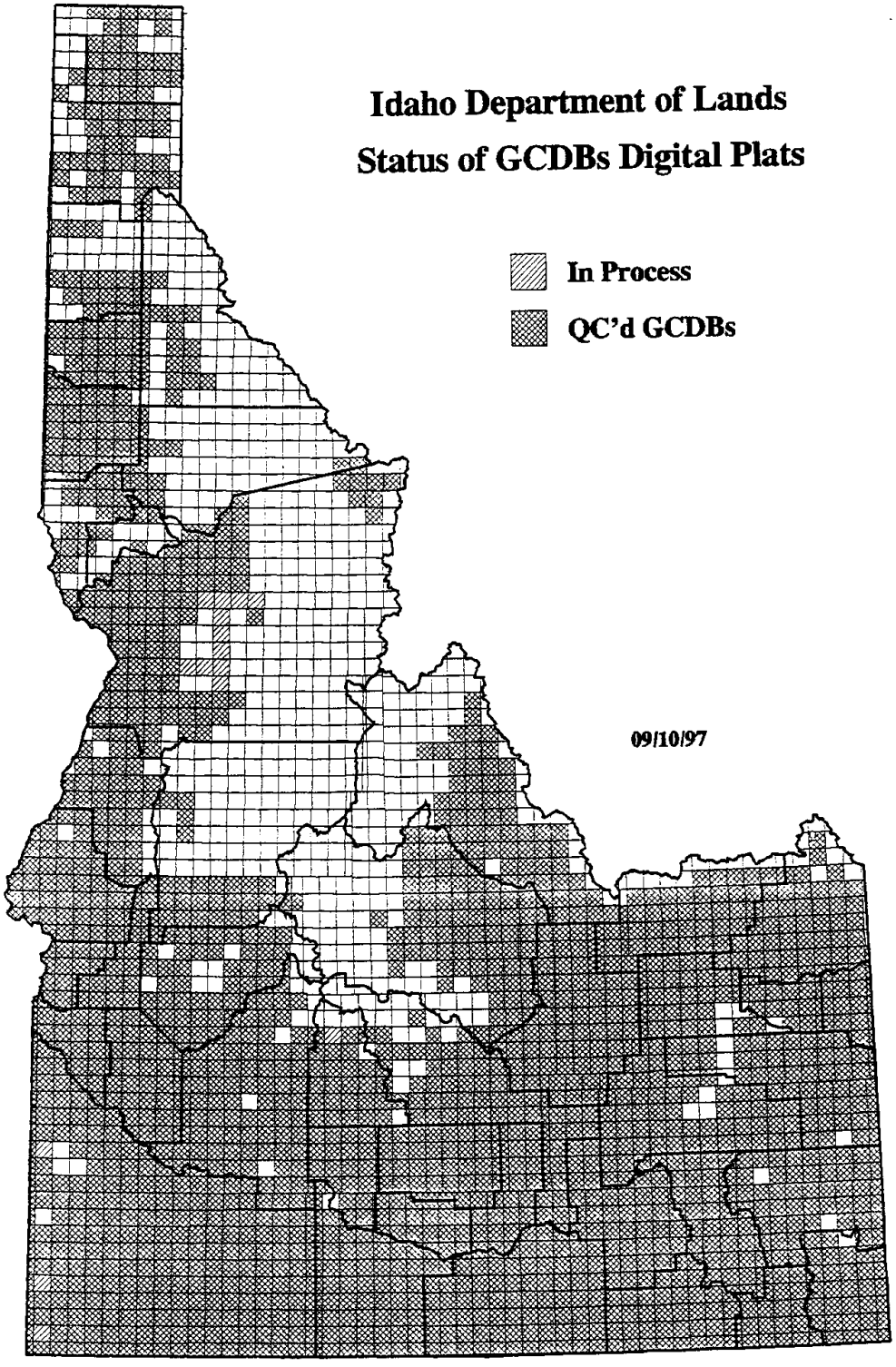
# BUREAU OF LAND MANAGEMENT
## IDAHO STATE OFFICE
## GEOGRAPHIC COORDINATE DATA BASE

July 3, 1997




NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT FOR THE USE OF THE DATA FOR PURPOSES NOT INTENDED BY THE BLM.

THE GEOGRAPHIC COORDINATE DATA BASE PORTRAYS THE RECTANGULAR SURVEY SYSTEM IN A DIGITAL FORMAT. IT CONTAINS SEVERAL DIFFERENT FILES INCLUDING THE COORDINATES OF SECTION CORNERS OF 40 ACRE LEGAL SUBDIVISIONS, AND MOST LOTS. FOR MORE DETAILED INFORMATION CONTACT THE GCDB SECTION AT (208) 373-3993.


Idaho Department of Lands
Status of GCDBs Digital Plats
In Process
QC'd GCDBs
09/10/97

# IDAHO DEPARTMENT OF LANDS 1:24,000 MAPPING

By Dave Gruenhagen, Idaho Department of Lands

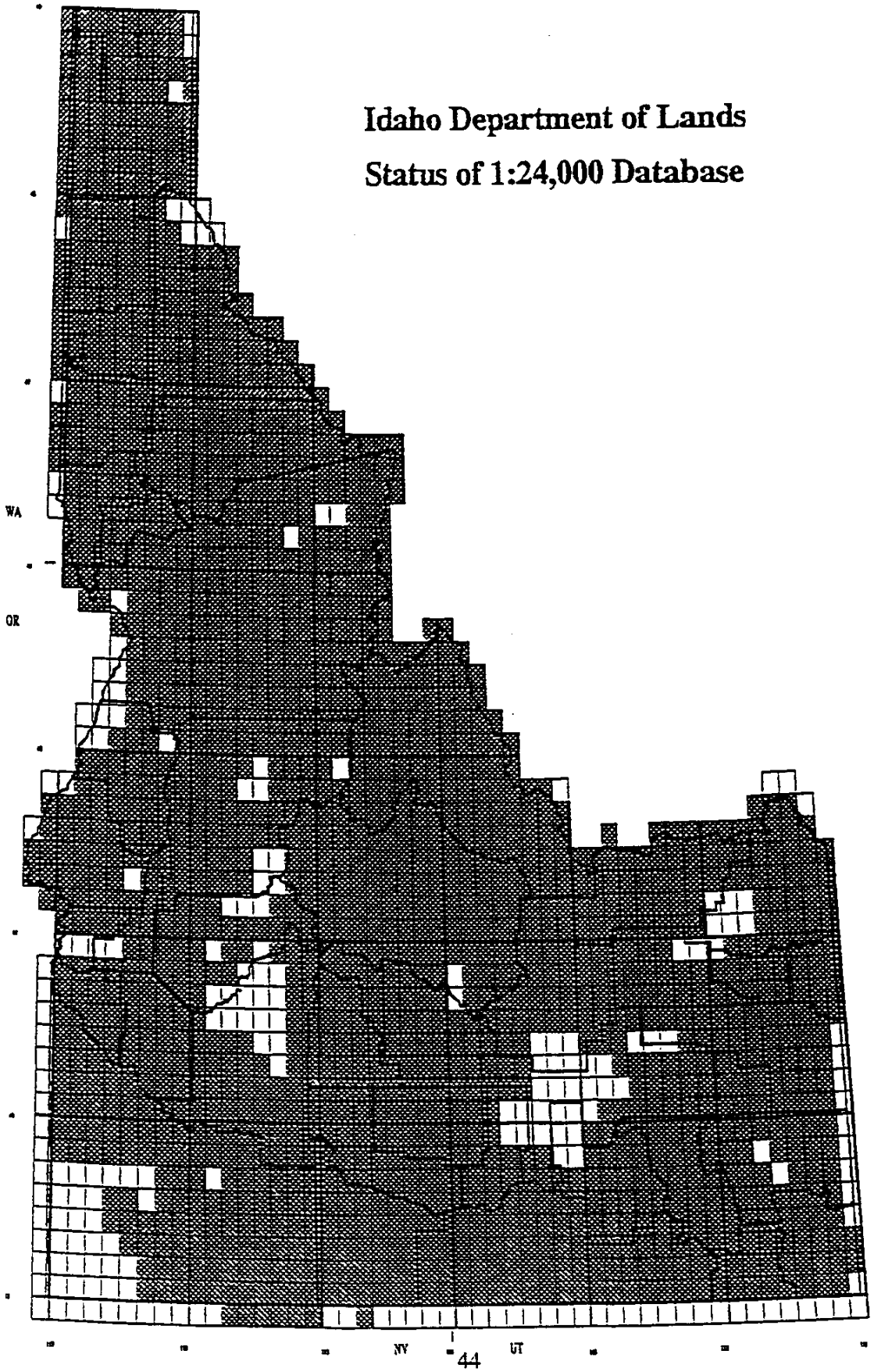
The Department of Lands continues to build and enhance its 1:24,000-scale database. This is being accomplished through a hybrid approach by integrating cartographic feature files (CFFs), produced by the U.S. Forest Service, and digital line graphs (DLGs), produced by U.S. Geological Survey, into a common geographic database. The data are separated into the standard USGS data layers: hydrography, roads and trails, PLSS, boundaries, railroads and miscellaneous transportation. Quads that use CFF data as the source also have manmade features and spot elevation points layers.

Data to build this database was acquired cooperatively through data-sharing agreements from the U.S. Forest Service, Idaho Transportation Department, and U.S. Bureau of Land Management. Cooperative working relationships have greatly assisted the Department to perform quality control for the database. Agencies that are cooperating, or that have provided cooperative help, include the Idaho State Tax Commission, Idaho Division of Environmental Quality and the U.S. Bureau of Reclamation. Their direct cooperative assistance has greatly helped to develop this database statewide.

Metadata is attached to each of the nearly 12,500 coverages. This is done automatically during the conversion process. The metatdata does not explicitly follow the metadata standard because the database development was started before the metadata standard was finalized; however it does contain important information about each coverage.

This past year these data have undergone further quality control and organizing by appending the quads into one degree blocks. During this process, the quads were edge-matched to one another within the one degree block.

# Idaho Department of Lands
# Status of 1:24,000 Database



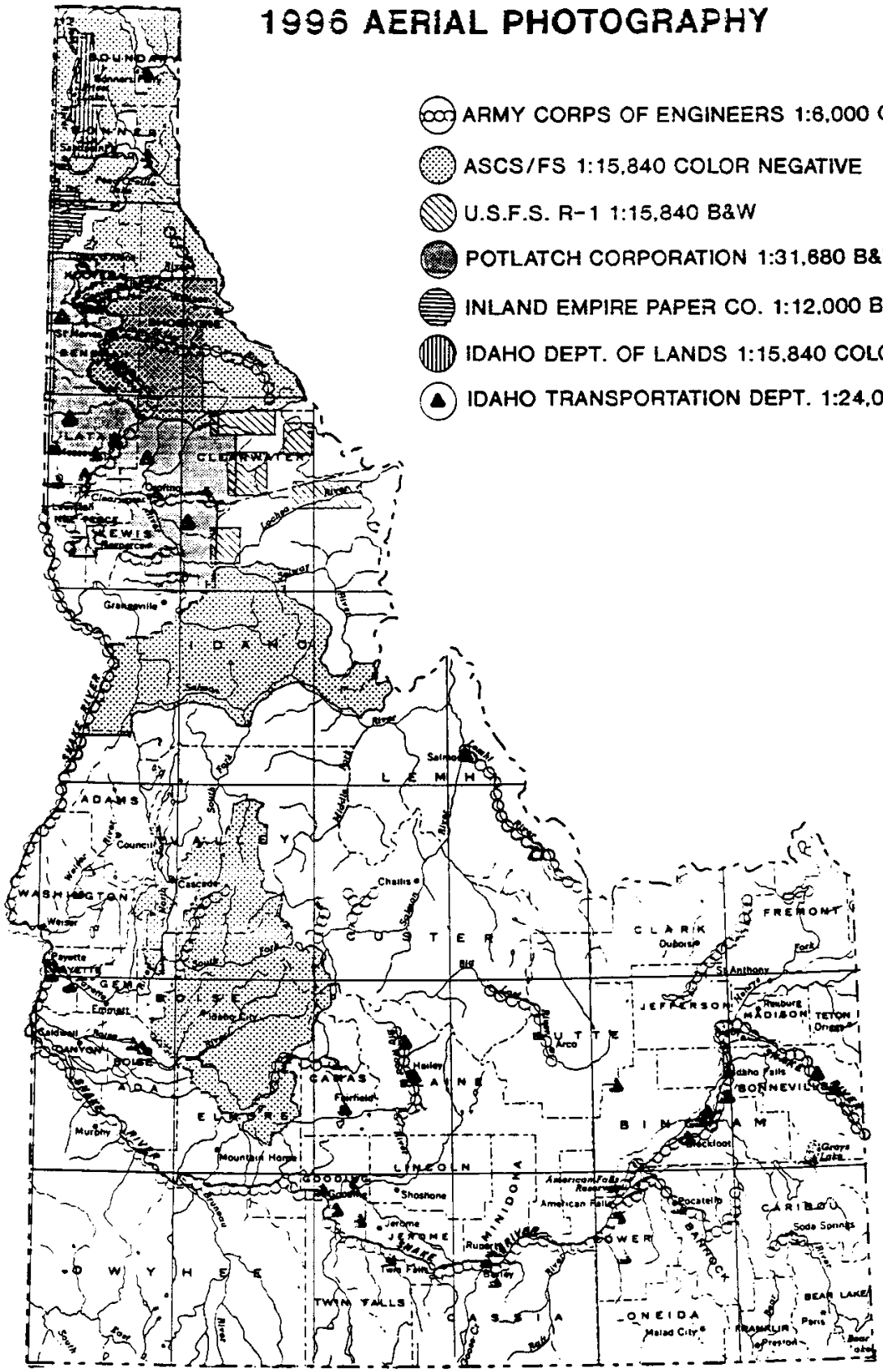
# AERIAL PHOTO AND ORTHOPHOTOQUAD NEWS

## Orthophoto Quadrangle Production

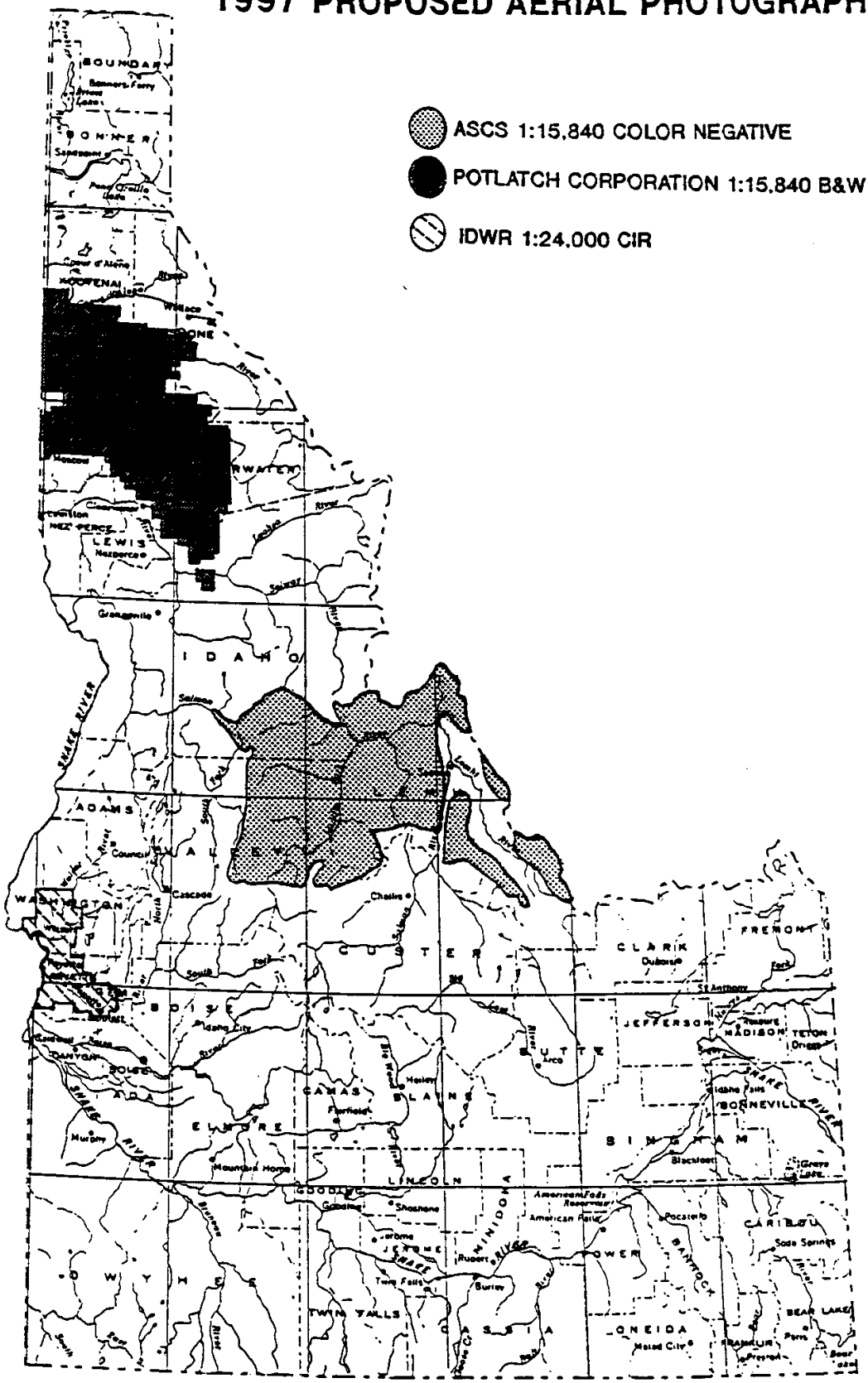
Orthophoto quadrangles (OQs) are mostly 1:24,000-scale photo image maps formatted to cover the same area as the standard 7.5-minute quadrangle maps. Some OQs are made to other scales and some agencies use a township format.

Originally conceived as a temporary stand-in for standard maps, orthophotoquads, as they are called, have found a niche as a replacement for high-altitude photo maps. They have been adopted and maintained as a base by the U.S. Bureau of Land Management, the U.S. Forest Service, the U.S. Natural Resources Conservation Service, U.S. Bureau of Indian Affairs, the Idaho Department of Lands, the Idaho Department of Water Resources, Boise Cascade Corporation, and Potlatch Corporation. Nearly all agencies using OQs acquire reproducible masters. Nearly all production of orthophotography is made by digital methods.

# 1996 AERIAL PHOTOGRAPHY

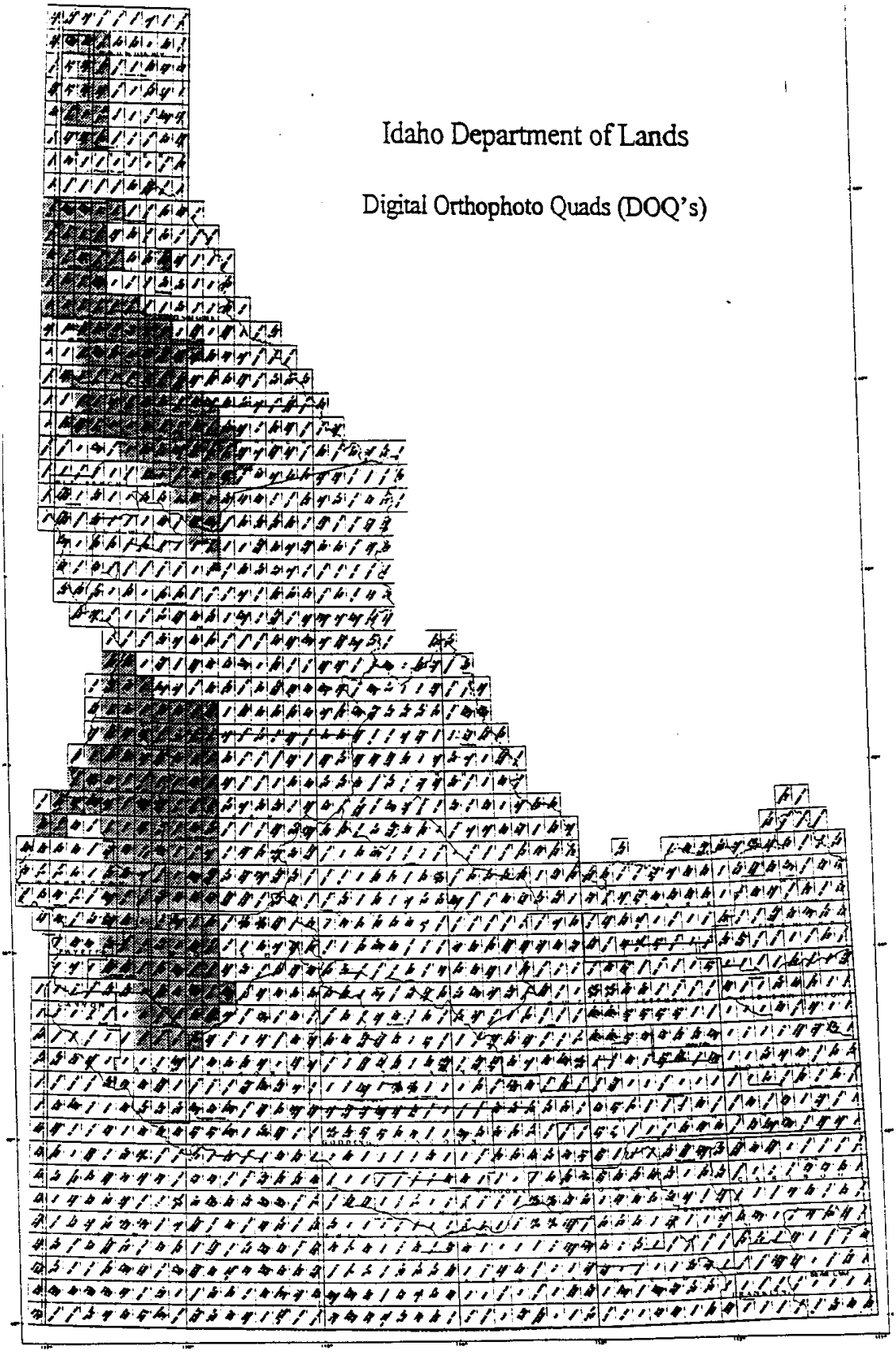


# 1997 PROPOSED AERIAL PHOTOGRAPHY

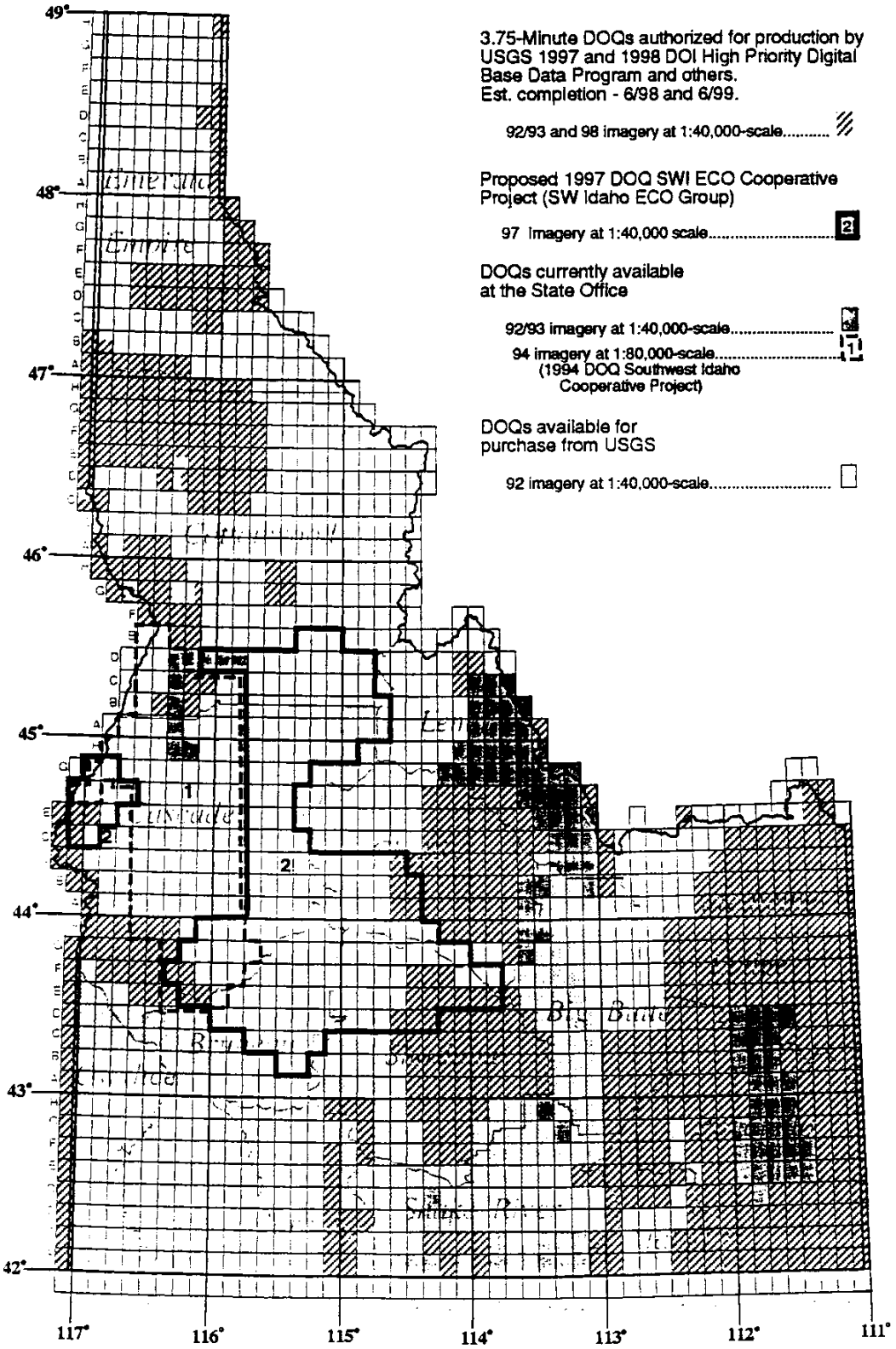


# Idaho Department of Lands

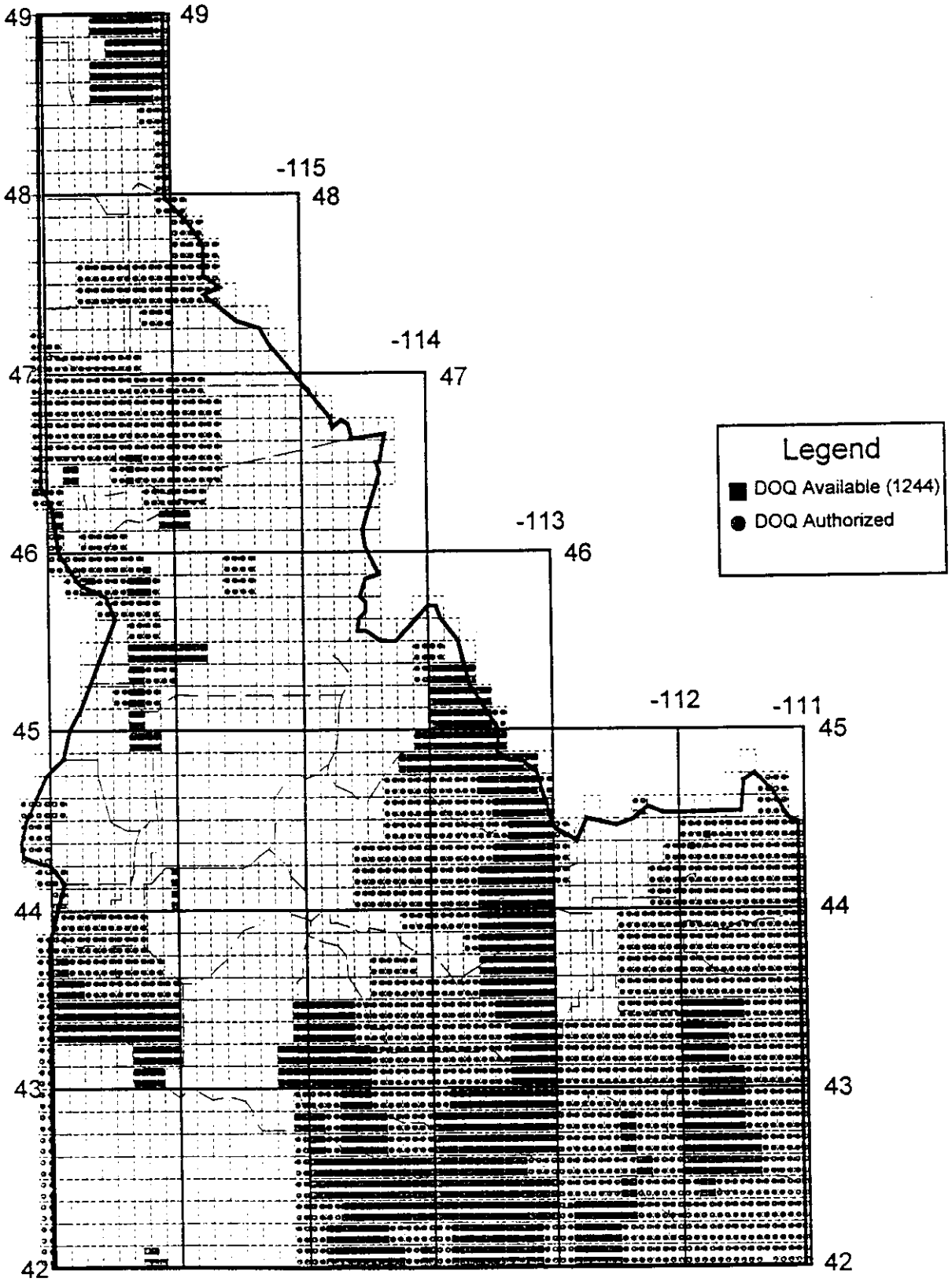
## Digital Orthophoto Quads (DOQ's)



# Digital Orthophoto Quads (DOQs)




BLM, Idaho State Office, Mapping Team, October 1997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Legend
DOQ Available (1244)
DOQ Authorized

By Jean Parcher, National Mapping Division

Department of Interior High Priority Initiative Projects

**Digital Orthophotos**
The Department of Interior High Priority Initiative (DOI) is funding 623 Digital Orthophoto Quarter Quads (DOQQ), 3.75 minute by 3.75 minute, in the state of Idaho. Current NAPP photography will be used for the DOQQ production. The areas included are near the Yellowstone National Park area, Treasure Valley and the Grangeville area. The estimated completion date is August 1997.

**Digital Elevation Models**
The DOI High Priority program is funding 11 replacement 1:24,000-scale Digital Elevation Models (DEM) in Idaho. These DEMs will be created with a 10-meter grid posting. The 10-meter grid increases the resolution of the data. The 10-meter DEMs are a new U.S. Geological Survey (USGS) product. The following quads will be produced:

Loon Lake, ID
Livingston Creek, ID
Roseworth NE, ID
McMullen Basin, ID
Grand View Peak, ID
Buffalo Lake, ID
Buffalo Lake NE, ID
Rams Horn Ridge, ID
McRenolds Reservoir, ID
Sheep Falls, ID
Bechler Falls, WY

The estimated completion date is May 1997.

**Digital Raster Graphics**
Digital Raster Graphics (DRGs) will be produced for five one-degree blocks in Idaho. The Pacific Northwest DOI High Priority program will fund four blocks on the Oregon- Washington border. The Greater Yellowstone DOI High Priority will fund one block on the Wyoming-Montana-Idaho border. The estimated completion date is June 1997. The 1:250,000-scale names of the five one-degree blocks are:

Pullman, Washington
Boise, Idaho/Oregon
Baker, Idaho/Oregon
Grangeville, Idaho/Oregon
Ashton, Wyoming

Bureau of Land Management Cost Share

The Bureau of Land Management (BLM) is cooperatively funding 40 replacement DEMs in Idaho. These DEMs have been completed and delivered to the Idaho State BLM office. Within 60 days, the DEMs will be transferred to the USGS Sales Database and can be ordered from an Earth Science Information Office. The USGS DEM status graphic shows the location of these quads with an authorized symbol.

Digital Elevation Replacement

As part of National Mapping Division's elevation program, level 1 and 15-meter accuracy DEMs are being replaced. For Idaho, there are 44 1:24,000-scale DEMs being replaced. The estimated completion date is February 1997.

Digital Orthophoto Quadrangles

There are 338 DOQQs being created as part of a cost share agreement with NRCS. These are located in Latah and Clearwater counties. The estimated completion date is August 1997.

PLSS 1:100,000-Scale Corrections

The Idaho Department of Water Resources has identified 32 1:100,000-scale DLG PLSS quadrangles with errors. The USGS has begun an innovative program to correct the PLSS digital data files. The data will be corrected and archived in the USGS Sales Database. This will provide users and the state of Idaho with the same quality of data. GIS users will no longer have to determine which database is correct, as they will be one and the same.

Boise Cascade Corporation Data Exchange Agreement

The USGS and Boise Cascade Corporation are working on a potential Innovative Partnership
Data exchange agreement. Boise Cascade has 593 1:24,000-scale hysposgraphy data files: Idaho (88), Washington (266), and Oregon (239). USGS is interested in the data for creating 10-meter Digital Elevation data models. Boise Cascade is interested in USGS's DOQs, DEMS and DLGs.

**USGS Summary of Idaho Mapping Program**

Work in Process as of 10/21/96:

| | |
|---|---|
| Digital Orthophoto Quarter Quadrangles | 961 quadrangles |
| Digital Elevation Models | 84 quadrangles |
| 1:24,000-Scale Hydrography DLG | 9 quadrangles |
| 1:24,000-Scale Transportation DLG | 9 quadrangles |
| 1:24,000-Scale Boundary DLG | 2 quadrangles |
| Digital Raster Graphics (1 degree blocks - 64 quads each) | 5 blocks |

Maps and Data Available as of 10/21/96:

| | |
|---|---|
| 7.5-Minute Topographic Maps (1,693 maps) | 100% of State |
| State Base Maps - 1:500,000-Scale | 1 sheet |
| High Altitude Quad-Centered Photography | 100% of State |
| Land Use/Land Cover Maps (27 quadrangles) | 100% of State |
| Orthophoto Quadrangles Complete | 100% of State |
| 1:100,000-Scale Planimetric | 68 quadrangles |
| 1:100,000-Scale Topographic | 65 quadrangles |
| Digital Orthophoto quarter quadrangles | 1201 quadrangles |
| 1:24,000-Scale DEM (7- and 15-meter standards) | 1580 quadrangles |
| 1:24,000-Scale Hydrography DLG | 892 quadrangles |
| 1:24,000-Scale Transportation DLG | 933 quadrangles |
| 1:24,000-Scale Boundary DLG | 1164 quadrangles |
| 1:24,000-Scale PLSS DLG | 1165 quadrangles |
| 1:24,000-Scale Hypsography DLG | 72 quadrangles |
| 1:24,000-Scale Manmade Features DLG | 40 quadrangles |
| 1:24,000-Scale Survey Control and Markers DLG | 9 quadrangles |
| 1:24,000-Scale Vegetation | 10 quadrangles |
| 1:24,000-Scale Non-vegetative Features DLG | 10 quadrangles |
| 1:100,000-Scale Hydrography DLG | 68 quadrangles |
| 1:100,000-Scale Transportation DLG | 68 quadrangles |
| 1:100,000-Scale Boundary DLG | 66 quadrangles |
| 1:100,000-Scale PLSS DLG | 67 quadrangles |
| 1:100,000-Scale Hypsography DLG | 1 quadrangle |
| 1:100,000-Scale County Planimetric Maps | 7 Counties |
| 1:250,000-Scale LU/LC (vector and Grid Cell data sets) (not printed, film reproducible copy available) | 20 maps |

Summary of Characteristics of the National Hydrography Dataset

The National Hydrography Dataset (NHD) is a feature-based database that interconnects and uniquely identifies the stream segments or "reaches" that comprise the nation's surface water drainage system. It contains the feature types listed in the attachment. The counts indicate the numbers of features that were converted from the USGS DLG-3 data. The NHD is currently based on the content of the U.S. Geological Survey 1:100,000-scale data, plus reach codes for networked features and isolated lakes, names for lakes and other water bodies, names for many "compound" streams, flow direction and centerline representations of areal water bodies. The reach code is a unique identifier for surface water features and was originally developed by the U.S. Environmental Protection Agency. The reach code provides a way to integrate data from organizations at all levels by linking them to this nationally consistent hydrologic network. The reach code was designed to accommodate higher-resolution data. The data is defined in decimal degrees and is based on NAD83.

- The primary entity in the NHD is a basic feature. There are 44 different types of basic features
- A basic feature can be represented by a point, a fine or collection of lines, or a polygon or collection of polygons
- Features may be grouped, regardless of dimensionality or attribution, into compound features
- There are two types of compound features defined: Reaches and Watercourse
- Reaches are compound features which form a connected 1-dimensional network representing 12 basic feature types. Reaches have unique IDs which are 14-digit reach codes: Catalog Unit (8) + Segment (6).
- Watercourses are compound features which represent a named path. Watercourses may be composed of reaches or of basic features. Watercourses have unique IDs which come from the Geographic Names Information System (GNIS)
- All basic features which do not belong to a reach have a unique feature ID.
- The NHD will be housed in an ORACLE/SDE database called the Feature Operational Database
- The NHD will be available on the Internet through the USGS
  Initially, retrievals by catalog unit will be supported
  Eventually, retrievals will be supported through queries of metadata
  User updates will be incorporated into the FOD

**Characteristics of the Reach File Subset of the NHD**

- The reach file is a subset of the NHD
- Approximately 81 percent of the NHD's basic features belong to reaches. The features that make up the reaches include:
  - Artificial Flow Path
  - Canal/Ditch
  - Connector
  - Lake/Pond
  - Pipeline
  - Stream/River
- In the first release of the FOD, the "reach file" is to be represented by a linear network
- In subsequent releases of the FOD, the "reach file" will be represented by a linear network and 2-dimensional (polygon) network
- Reaches have topologic connectivity through the use of "connector" basic features
- Reaches have attribute connectivity through the implementation of "flows to" relationships
- Reaches have a stream level attribute

**Feature Types and Counts found in the National Hydrography Dataset**

| FEATURE TYPE | COUNT |
|---|---|
| Area of Complex Channels | 8 |
| Area of Submerged | 56 |
| Artificial Flow Path | N/A |
| Bay/Inlet | N/A |
| Bridge | 153 |
| Canal/Ditch | 197,995 |
| Connector | N/A |
| Dam/Weir | 1,333 |
| Estuary | N/A |
| Flume | 1 |
| Foreshore | 2,408 |
| Fumarole | 1 |
| Gaging Station | 5,921 |
| Gate | 248 |
| Geyser | 57 |
| Hazard Zone | 11 |
| Ice Mass | 1,365 |
| Inundation Area | 5,616 |
| Lake/Pond | 381,386 |
| Lock Chamber | 249 |
| Mud Pot | 9 |
| Nonearthen Shore | 3,859 |
| Pipeline | 2,424 |
| Playa | 1,822 |
| Rapids | 3,164 |
| Reach | N/A |
| Reef | 609 |
| Reservoir | 12,585 |
| Rock | 1,477 |
| Sea/Ocean | 647 |
| Shoreline | 455,384 |
| Sounding Datum Line | 52 |
| Special Use Zone | 422 |
| Special Use Zone Limit | 1,525 |
| Spillway | 17 |
| Spring/Seep | 103,669 |
| Stream/River | 2,261,945 |
| Submerged Stream | 179 |
| Swamp/Marsh | 69,191 |
| Tunnel | 275 |
| Underpass | 2,196 |
| Wall | 363 |
| Wash | 984 |
| Watercourse | N/A |
| Waterfall | 2,703 |
| Well | 97,160 |
| TOTAL | 3,719,469 |

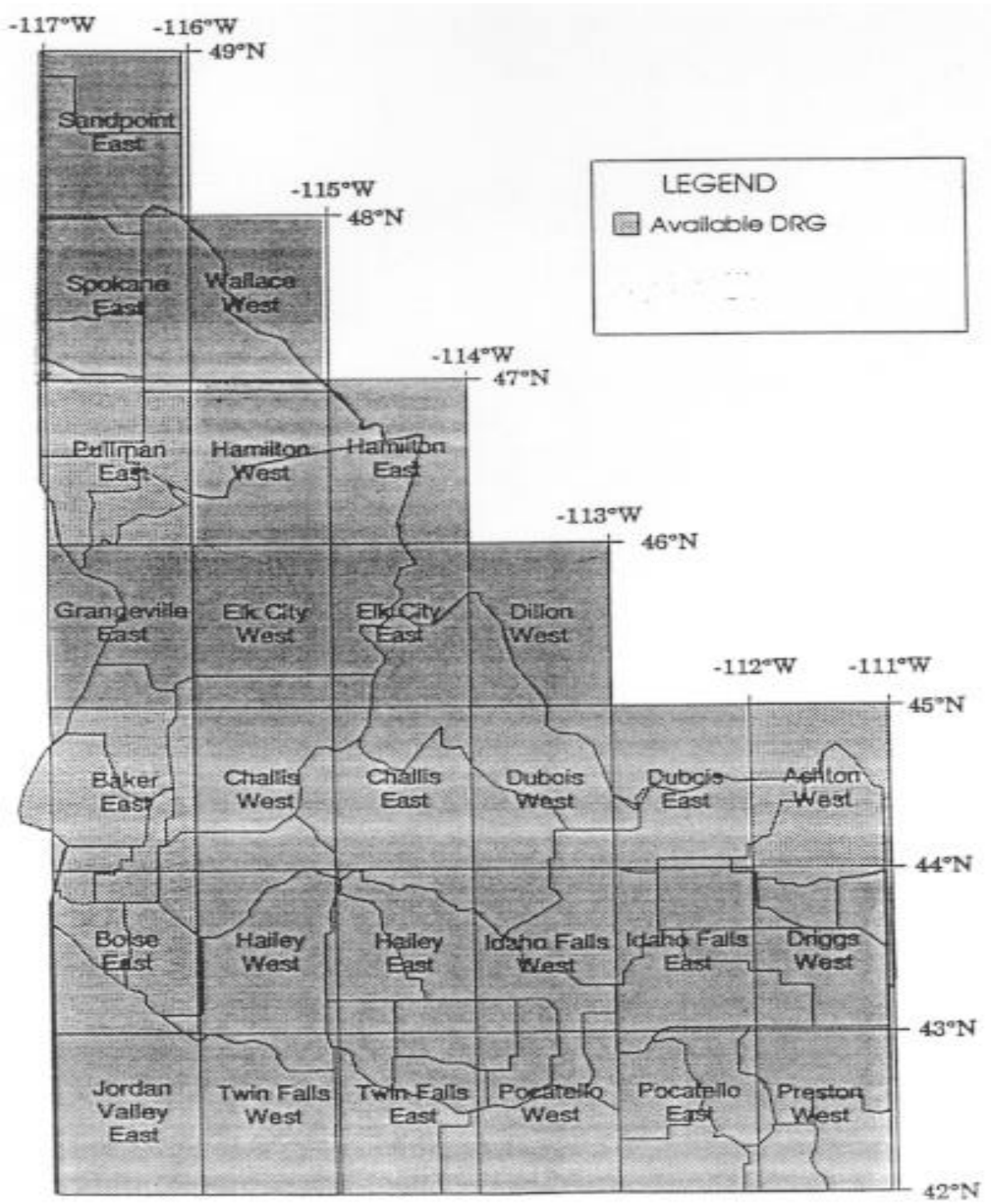
Converted from the USGS 1:100,000-scale DLG data for the conterminous US and Hawaii, plus 1:30,000-scale data for the Virgin Islands and 1:20,000-scale data for Puerto Rico. Alaska data is being developed from the 1:63,360-scale data currently being revised. Counts of N/A are features that are being added as part of the synchronization process.

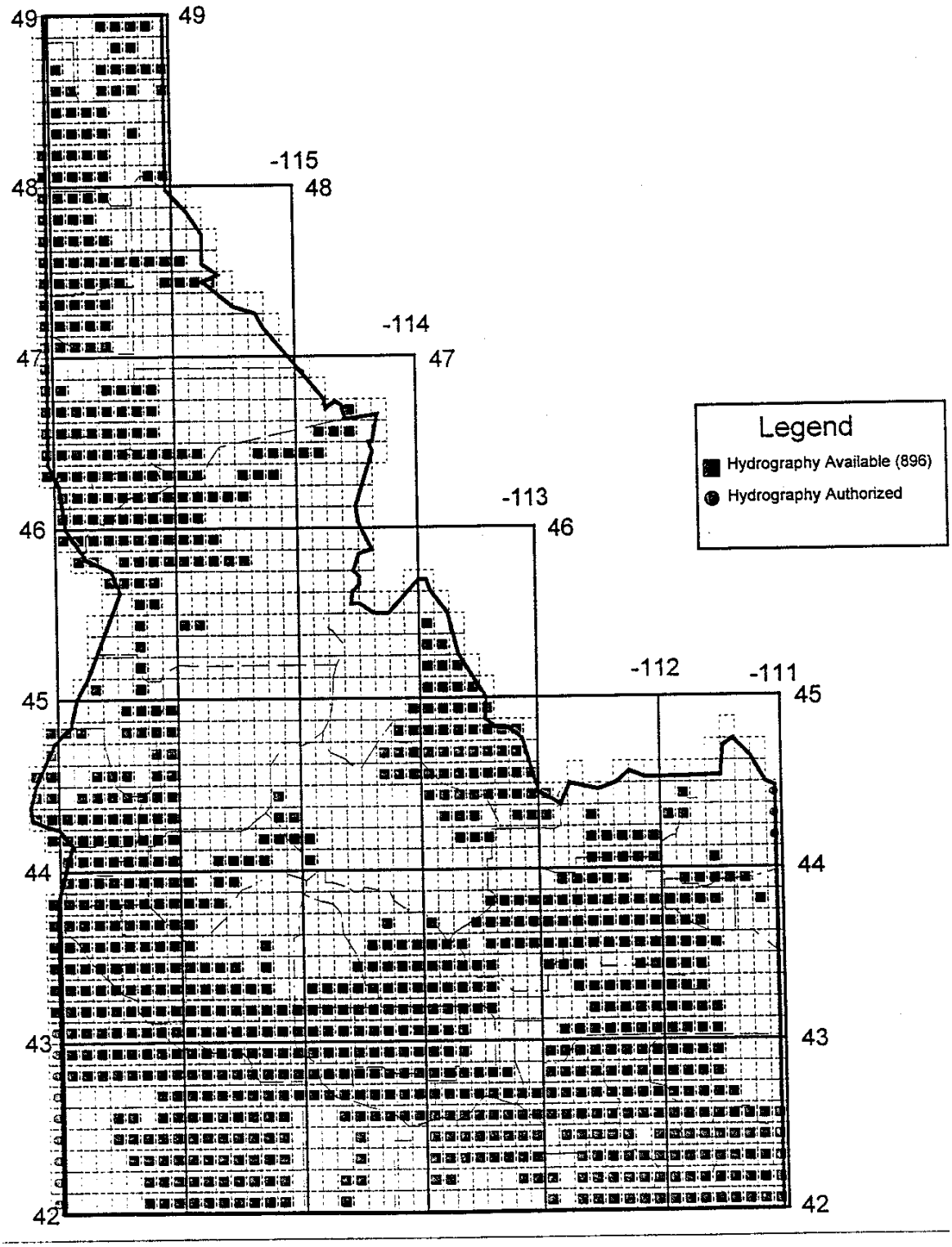
**USGS Digital Raster Graphics Cost Share Program**

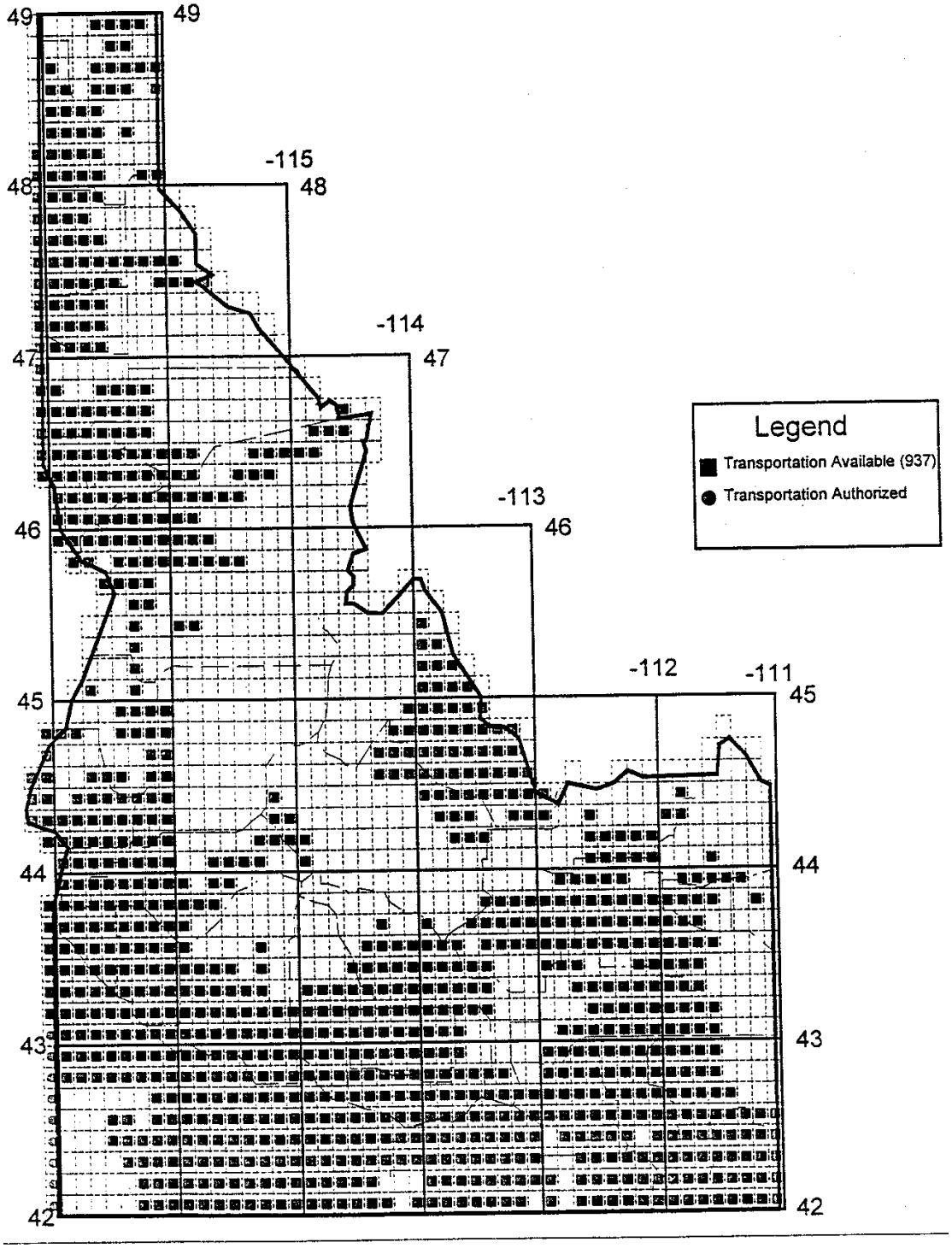
At the November 1996 IGIAC meeting, discussions were held with interested federal, state and local agencies to cost share on creating Digital Raster Graphics for the entire state of Idaho. A Digital Raster Graphic (DRG) is a scanned image of a U.S. Geological Survey (USGS) Topographic map. The scanned image inside the map is georeferenced to the surface of the Earth. In the months after the IGIAC meeting, the Idaho Division of Environmental Quality coordinated with several state and federal agencies to cost share with the USGS to produce DRGS for the entire state. The DRG's will be produced for each 1:24,000, 1:100,000, and 1:250,000-scale topographic map series in Idaho. The DRG's will be available on Compact Disc-Recordable (CD-R); each CD-R includes the USGS topographic maps for a one-degree cell. This includes sixty-four 1:24,000-scale files, two 1:100,000-scale files, and 1:250,000-scale file. The agencies involved in the cost sharing include: Idaho Department of Lands, Idaho Division of Environmental Quality, Idaho Transportation Department, U.S. Natural Resource Conservation Service, Idaho Army National Guard, Idaho Department of Fish and Game, U.S. Forest Service, U.S. Bureau of Land Management, U.S. Bureau of Reclamation, and U.S. Geological Survey-Water Resources Division. The majority of the DRG's should be available by October 1997.

Appendix F lists the USGS Internet Address Product Information and Software Tools.

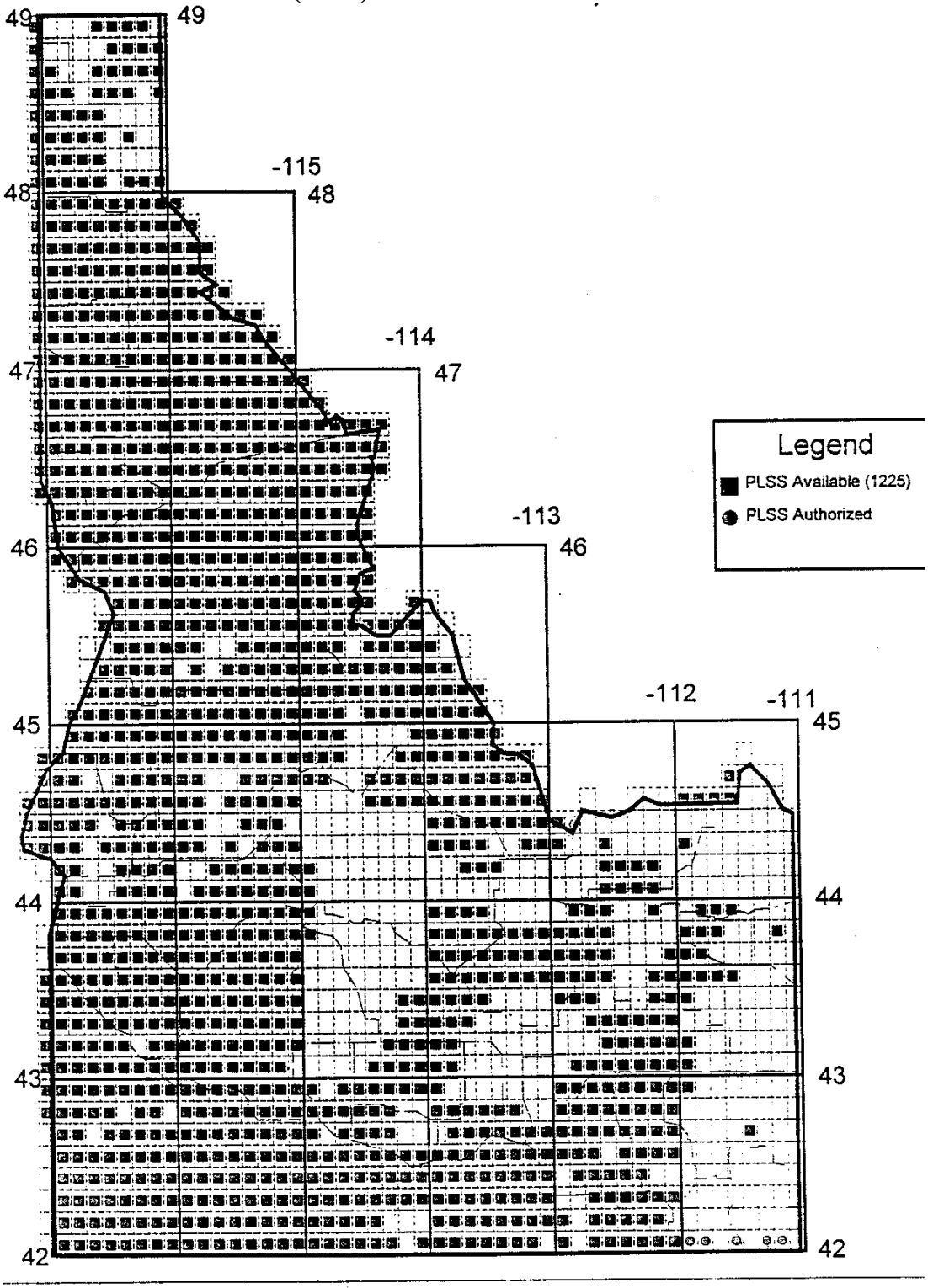
USGS Digital Raster Graphics



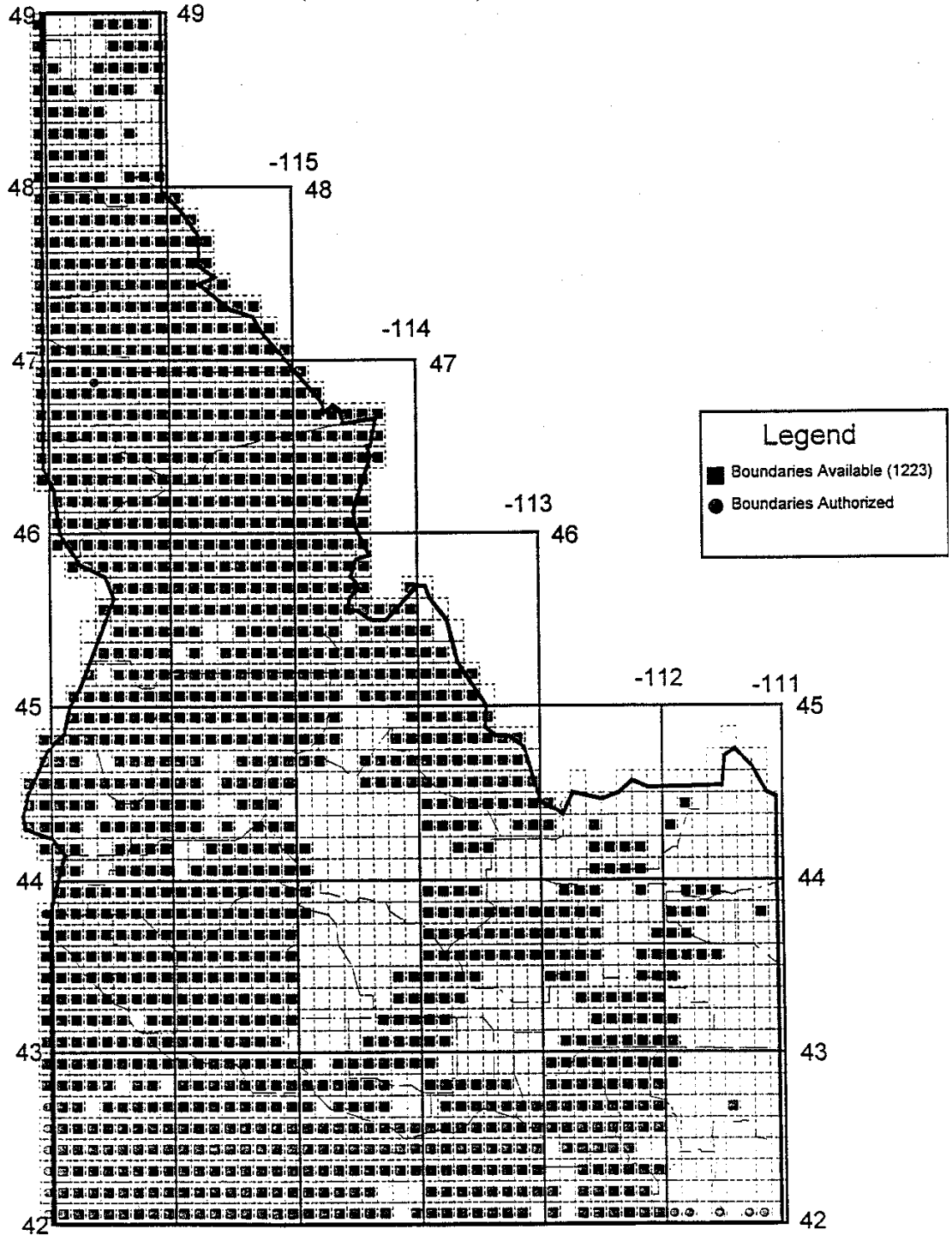

49
49
-115
48
48
-114
47
47
-113
46
46
-112
-111
45
45
44
44
43
43
42
42
Legend
Hydrography Available (896)
Hydrography Authorized


49
49
-115
48
48
-114
47
47
-113
46
46
-112
-111
45
45
44
44
43
43
42
42
Legend
Transportation Available (937)
Transportation Authorized

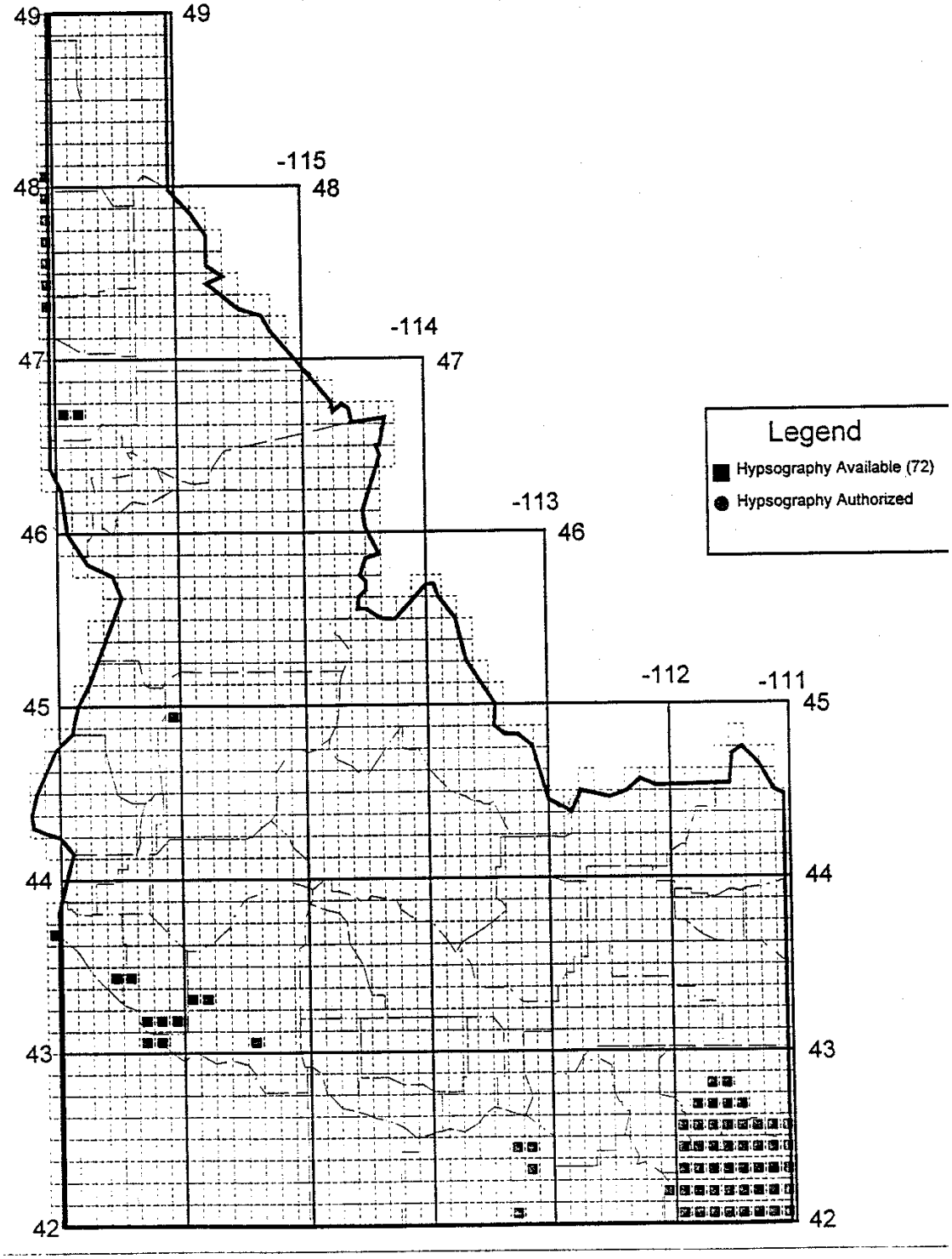
USGS 7.5 MINUTE DLGs (PLSS)



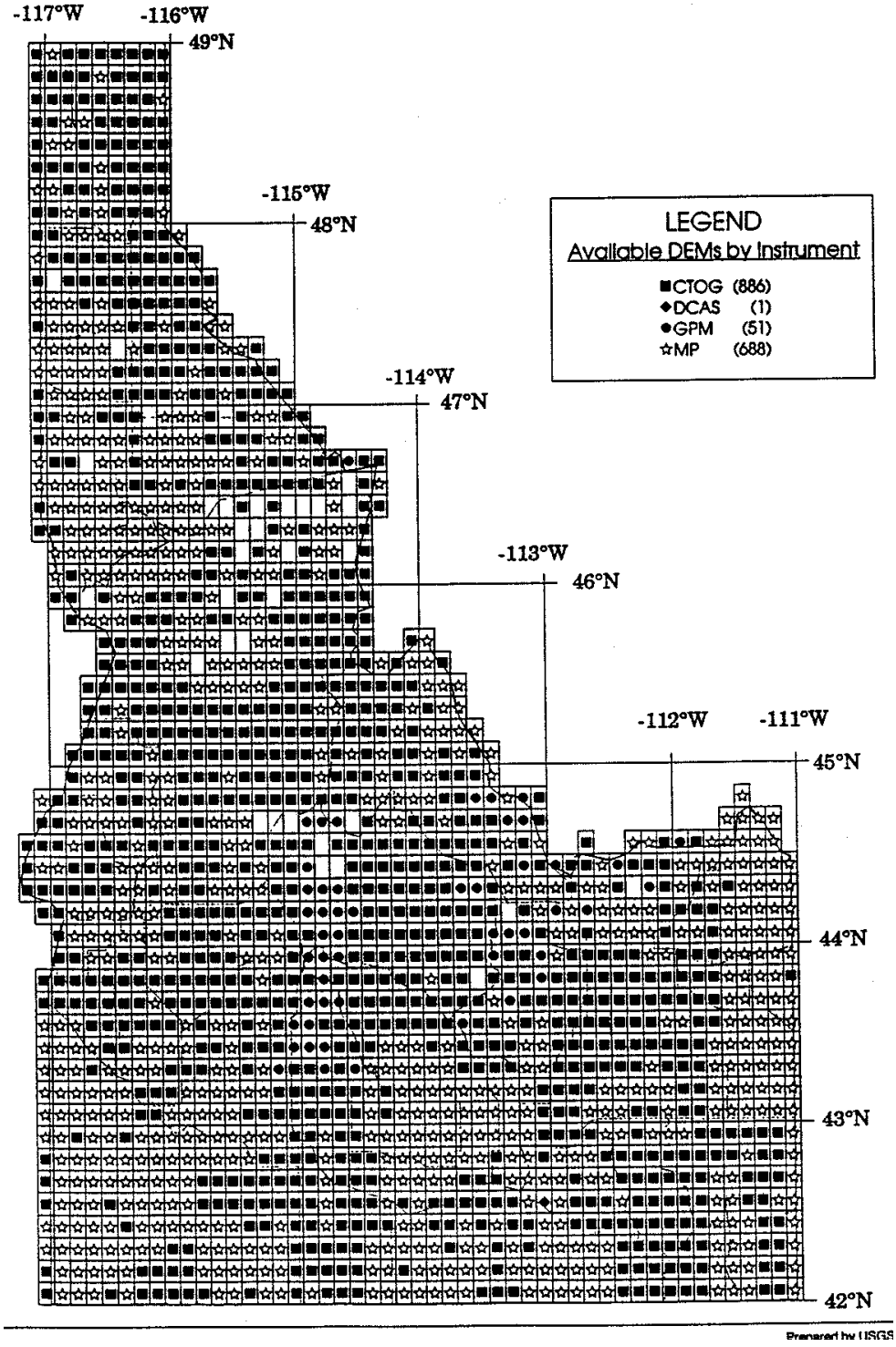
USGS 7.5 MINUTE DLGs (BOUNDARIES)



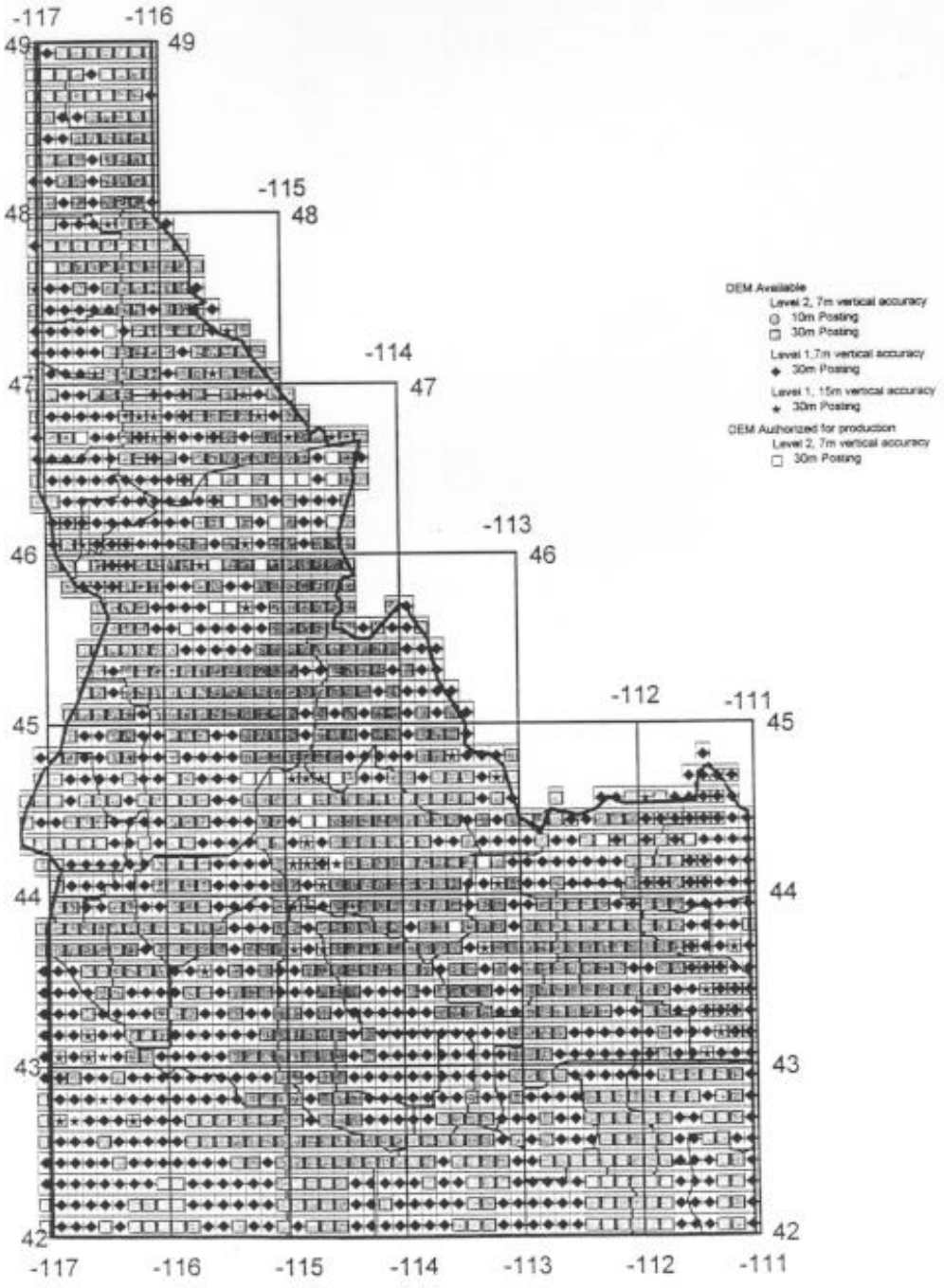
USGS 7.5 MINUTE DLGs (HYPSOGRAPHY)



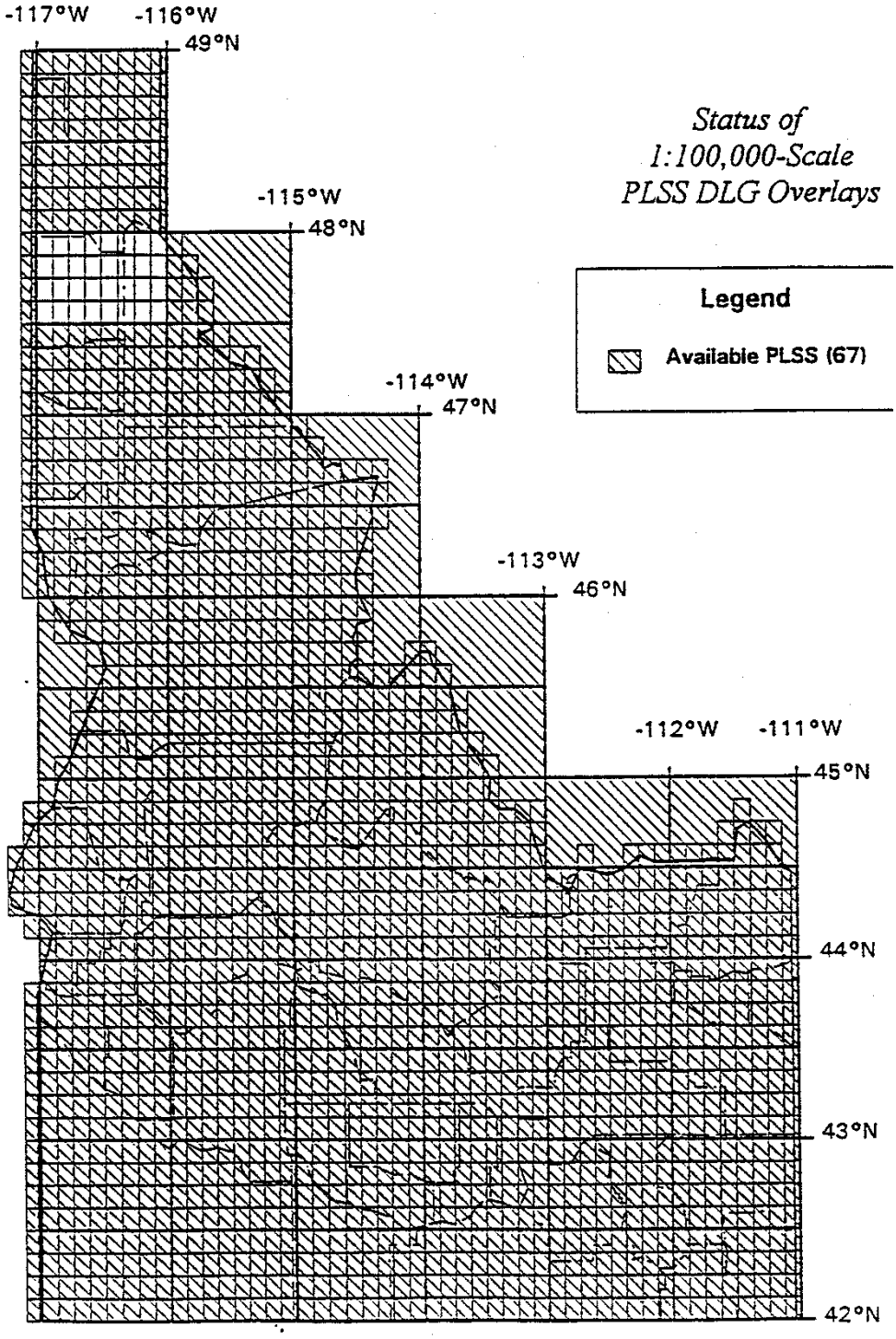
USGS 7.5 MINUTE DEMs (30 METER - CTOG, DCAS,GPM, MP)

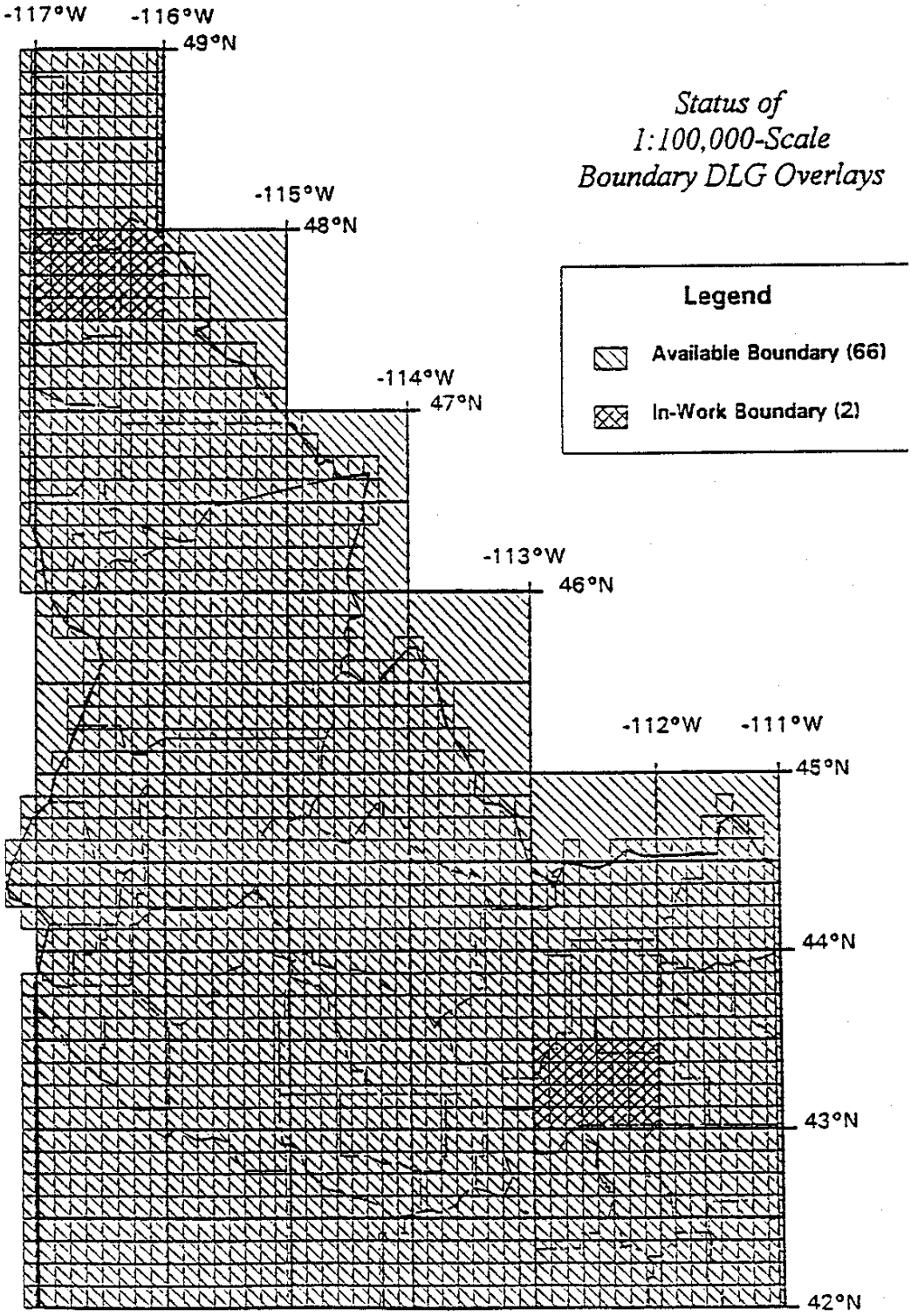


# Digital Elevation Model (DEM) Availability
## 7.5-Minute Series

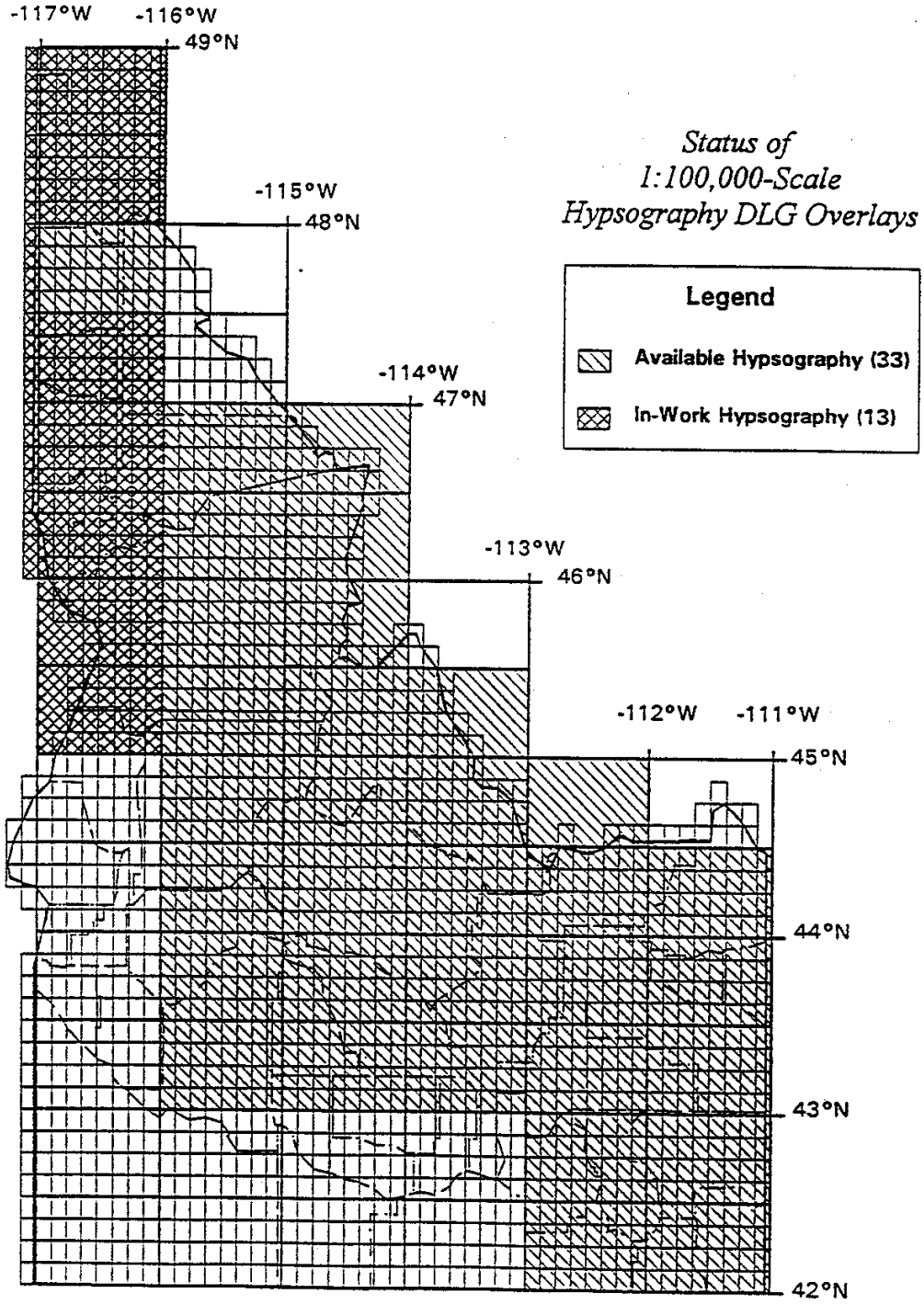


USGS 100K PLSS DLG OVERLAYS STATUS




-117°W
-116°W
49°N
-115°W
48°N
-114°W
47°N
-113°W
46°N
-112°W
-111°W
45°N
44°N
43°N
42°N
Status of
1:100,000-Scale
Boundary DLG Overlays
Legend
Available Boundary (66)
In-Work Boundary (2)

USGS 100K HYPSOGRAPHY DLG OVERLAYS STATUS



## UNIVERSITY OF IDAHO LIBRARY

by Dennis Baird

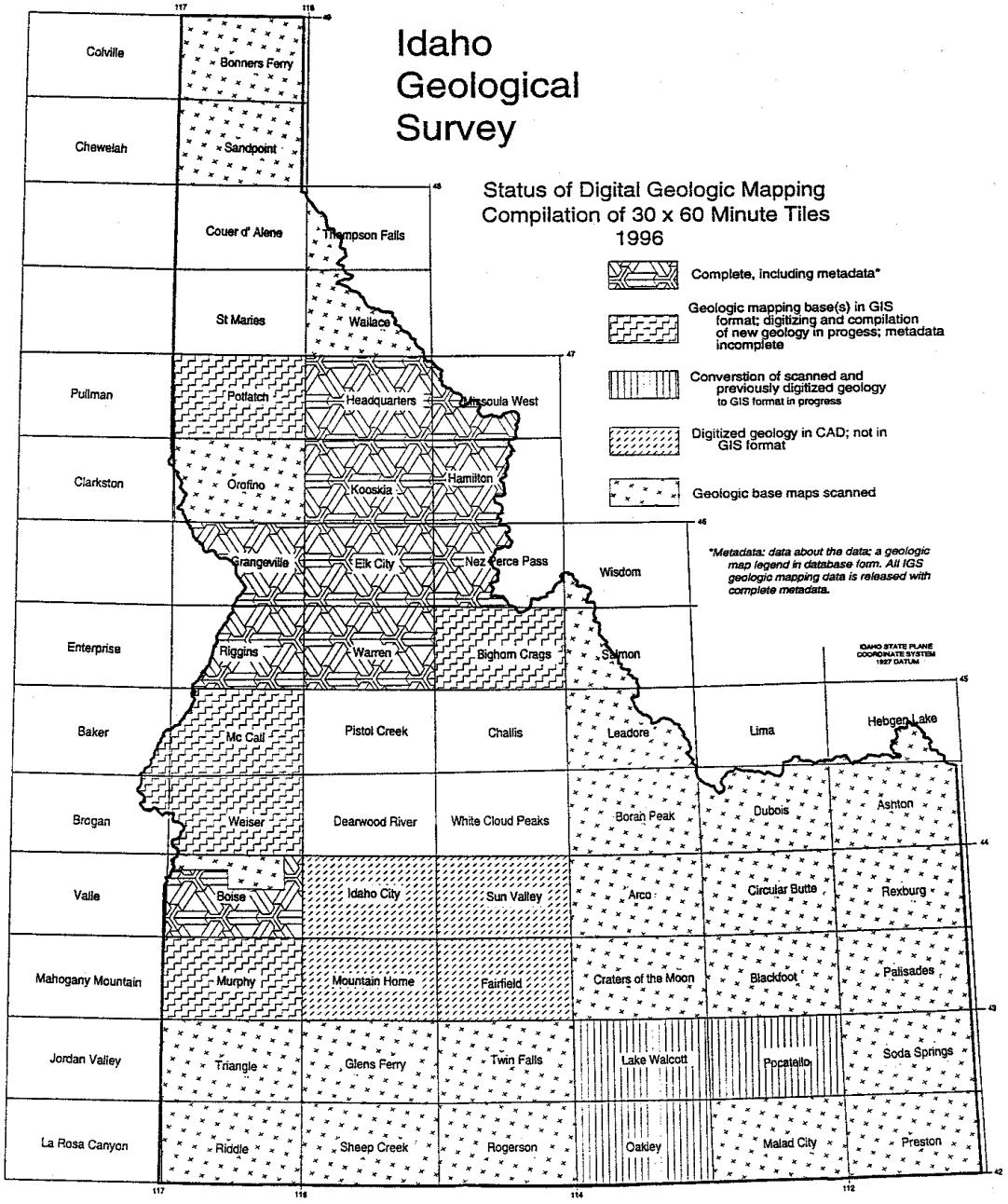
In cooperation with the Clearwater National Forest, the University of Idaho Library has produced an 8 CD-ROM set of scanned images of 1933 Washington National Guard vertical photos of Latah and Western Clearwater Counties. The scans were done at 300 dpi and are saved as compressed TIFF files. The average file size of each photo is about 6.5 MB.

Future scanning projects covering 1934-36 oblique photography of the Clearwater and Idaho Panhandle National Forests are also being planned.

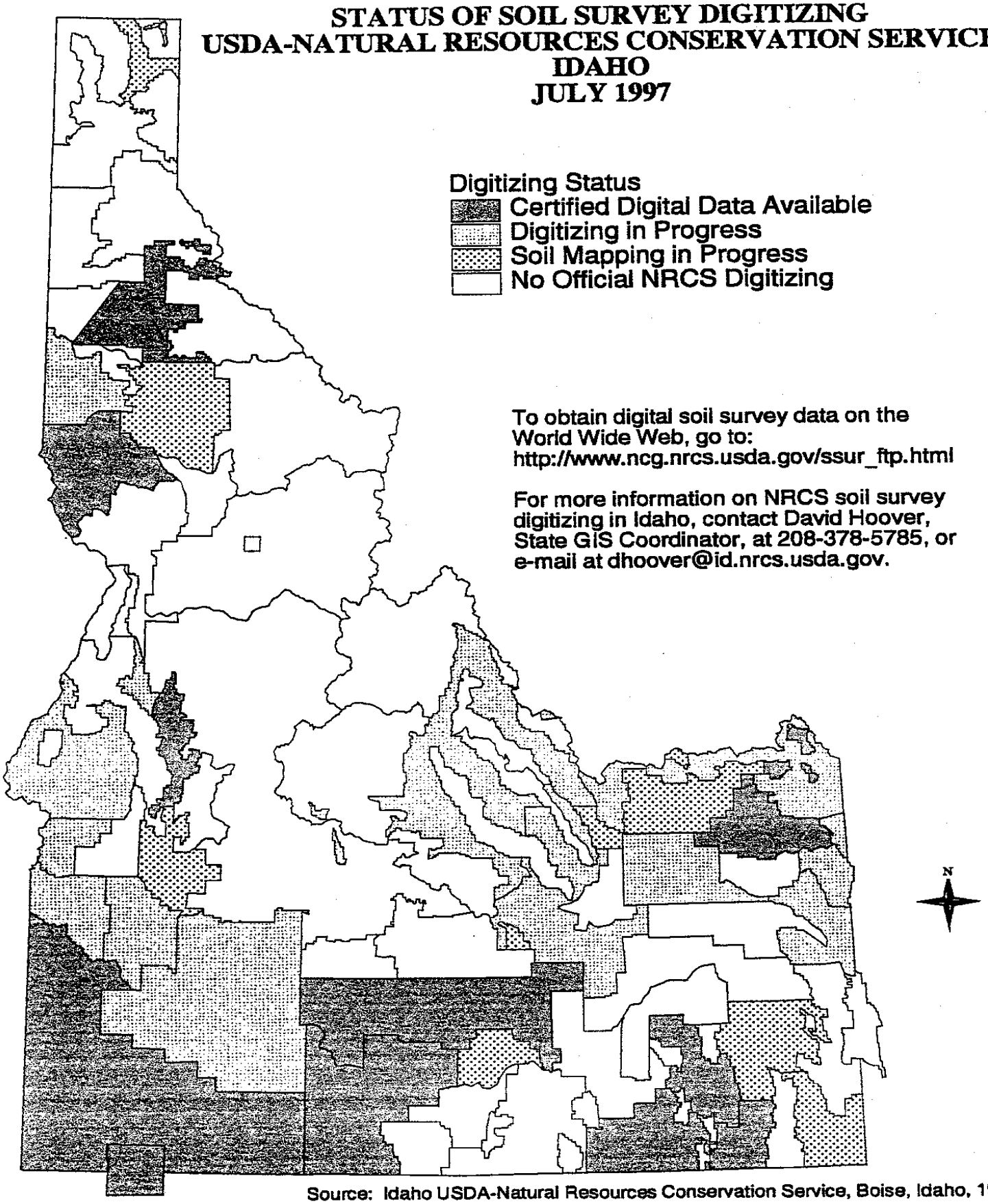
## OTHER AGENCY PRODUCTS STATUS MAPS

The maps on the following pages give updates from the following agencies: Idaho Geological Survey, USDA-Natural Resources Conservation Service, USDA Forest Service, and U.S. Bureau of Land Management.

IDAHO GEOLOGICAL SURVEY STATUS OF DIGITAL GEOLOGIC MAPPING



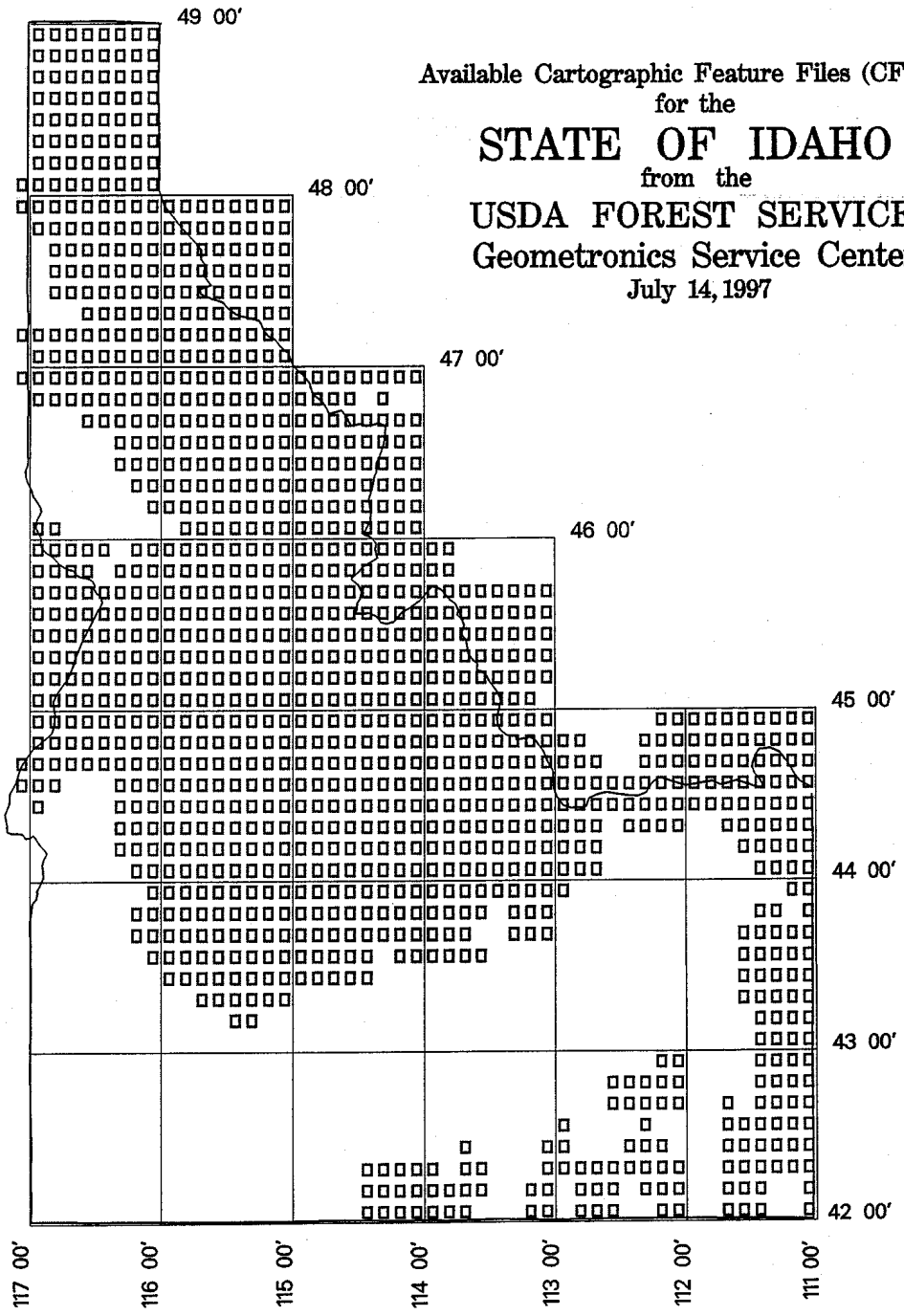
# STATUS OF SOIL SURVEY DIGITIZING
# USDA-NATURAL RESOURCES CONSERVATION SERVICE
# IDAHO
# JULY 1997




To obtain digital soil survey data on the World Wide Web, go to:
http://www.ncg.nrcs.usda.gov/ssur_ftp.html

For more information on NRCS soil survey digitizing in Idaho, contact David Hoover, State GIS Coordinator, at 208-378-5785, or e-mail at dhoover@id.nrcs.usda.gov.

Source: Idaho USDA-Natural Resources Conservation Service, Boise, Idaho, 1997




Available Cartographic Feature Files (CFF)
for the

# STATE OF IDAHO

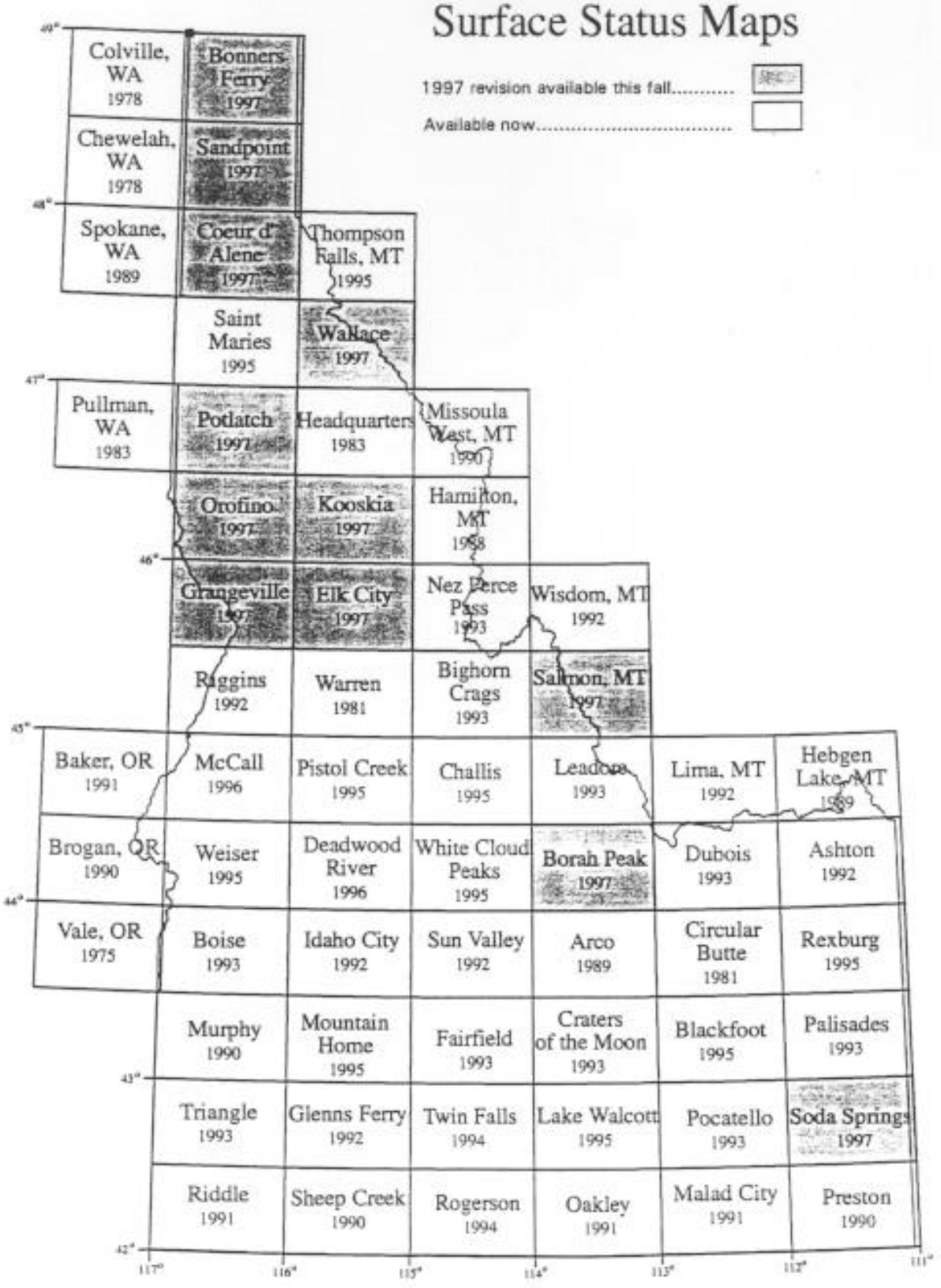
from the

## USDA FOREST SERVICE

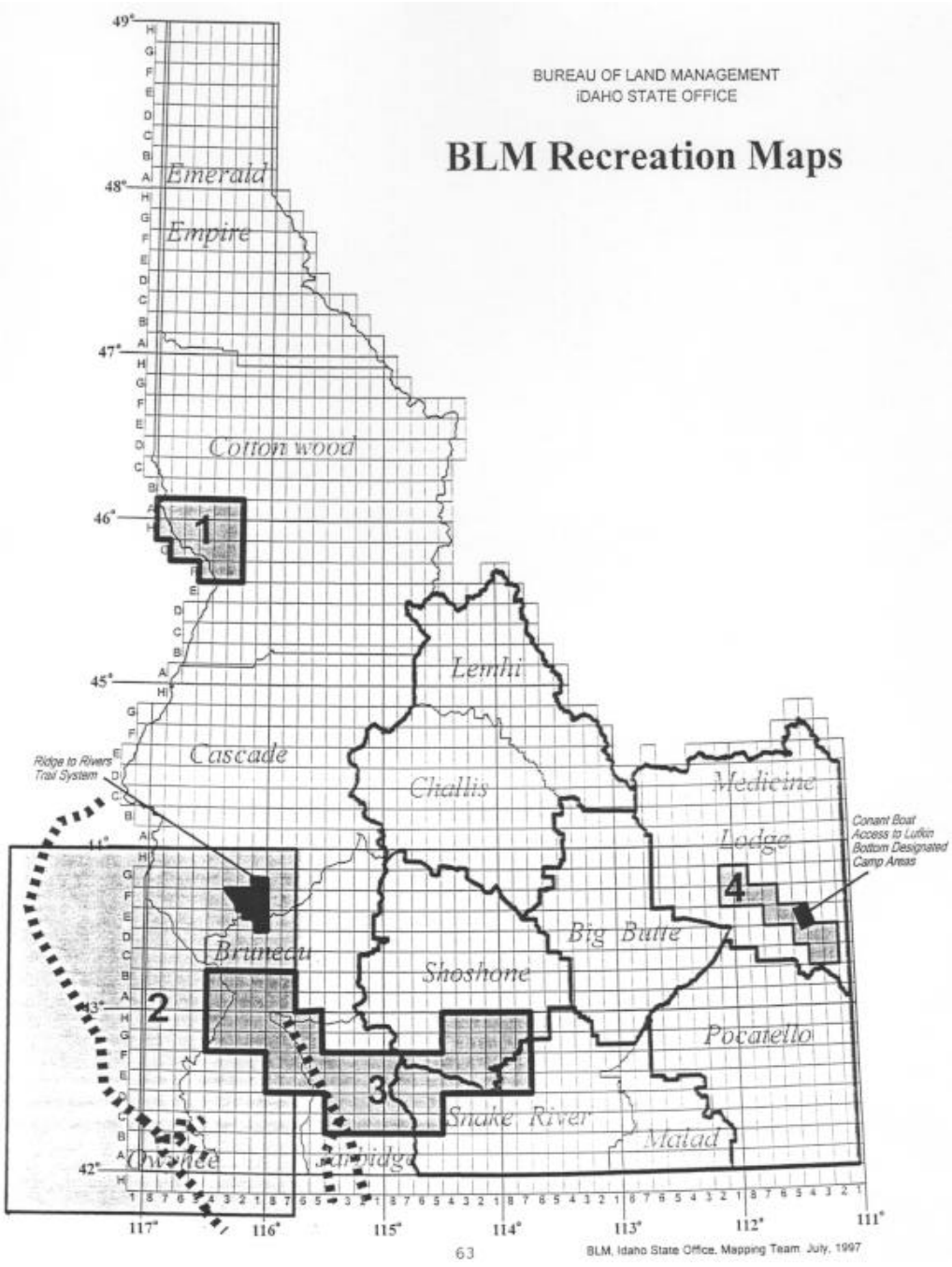
Geometronics Service Center

July 14, 1997

# BLM 1:100,000
# Surface Status Maps




BLM, Idaho State Office, Mapping Team, July 1997


BUREAU OF LAND MANAGEMENT
IDAHO STATE OFFICE
BLM Recreation Maps
Emerald
Empire
Cotton wood
Lemhi
Cascade
Challis
Medicine
Lodge
Ridge to Rivers Trail System
Conant Boat Access to Lotkin Bottom Designated Camp Areas
Big Butte
Brunecu
Shoshone
Pocatello
Snake River
Malad
Owyhee
Sawtooth
1
2
3
4
49°
48°
47°
46°
45°
42°
117°
116°
115°
114°
113°
112°
111°
BLM, Idaho State Office, Mapping Team, July, 1997

# Legend to
# BLM Recreation Maps

### Owyhee/Bruneau River Boater's Guide

Owyhee Resource Area
Base data derived from USGS 7.5' quads
March 1995 (scale - 1:1,140,000)..... ▪▪▪

### Lower Salmon River Display Map

Cottonwood Resource Area
Base data from 1:100,000 USGS DLGs;
shaded relief derived from USGS Level II,
30 meter DEMS and BLM produced
(using LT4X) level II, 30 meter DEMs
February 1997 (scale - 1:63,360)..... 1

### North Fork Kiosk Display Map

Cascade Resource Area
Base data from 1:100,000 USGS DLGs;
shaded relief derived from level I and II,
92.5 meter USGS DEMs
May 1997 (scale - 1:260,000)..... 2

### Middle Snake River Recreation Site Maps

Snake River Resource Area
Base data from 1:100,000 USGS DLGs;
status compiled from BLM and other records
December 1996 (scales - 1:250,000 and
1:125,000)..... 3

### South Fork of the Snake Boater's Guide

Medicine Lodge Resource Area
Base data from 1:100,000 USGS DLGs;
shaded relief derived from BLM produced
(using LT4X) level II, 10 meter DEMs
In progress (scale - 1:24,000)..... 4

### Ridge to Rivers Trail System Brochure

Boise Field Office
Base data from 1:100,000 USGS DLGs;
shaded relief derived from 1:24,000 USGS and
BLM produced(LT4X) Level II , 30 meter DEMs;
status compiled from BLM and other records
May 1996 (scale - 1:68,350)..... ▬

### Conant Boat Access to Lufkin Bottom Designated Camp Areas Map

Medicine Lodge Resource Area
Manually produced from USGS 1:24,000 base data;
status compiled from BLM and other records;
1996 (scale - 1: 24,000)..... ▬

### Shoshone District Recreation Map

Shoshone Resource Area
Manually produced from USGS 1:100,000 base data;
status and recreation data compiled from BLM and
other records.
1992 (scale - 1:168,960)

### Medicine Lodge Resource Area Recreation Map

Medicine Lodge Resource Area
Manually produced from USGS 1:100,000 base data;
status and recreation data compiled from BLM and
other records.
1993 (scale - 1:168,960)

### Pocatello Resource Area Recreation Map

Pocatello Resource Area
Manually produced from USGS 1:100,000 base data:
status and recreation data compiled from BLM and
other records.
1994 (scale - 1:168,960)

### Burley District Recreation Map

Snake River Resource Area and Malad Resource Area
Manually produced from USGS 1:100,000 base data;
status and recreation data compiled from BLM and
other records.
To be printed summer, 1997 (scale 1:168,960)

### Salmon District Recreation Map

Lemhi Resource Area and Challis Resource Area
Manually produced from USGS 1:100,000 base data;
status and recreation data compiled from BLM and
other records.
To be printed summer, 1997 (scale: 1:168,960)

# GEOGRAPHIC INFORMATION SYSTEMS IDAHO USERS

| LICENSE SYSTEM | COMPANY/AGENCY | TYPE* | CONTACT | PHONE NUMBER |
|---|---|---|---|---|
| **INTERGRAPH** | Bonneville County | 2,2,2,2,1(8) | Janet Cheney | 529-1350 x1568 |
| | Idaho Transportation Dept. | 2,2,2,3,5(3) | Ron Cole | 334-8222 |
| | Lockheed Martin Idaho Tech.Co. Inc. | 2,4 | Nielsen Burch | 526-5676 |
| | POWER Engineers/GGI | 2 | Robb Dye | 378-6316 |
| **ARC/INFO ARC/VIEW** | Ada County GIS | 2,2,2,2,2,2 2,2,2 | Sheldon Bluestein | 364-2378 |
| | Ada County Highway District | 3,1,1,1,1 | Diane Holloran | 345-7635 |
| | Ada Planning Association | 2 (3) | Roni Gehring-Pratt | 345-5274 |
| | Boise Cascade | 5(3), 2(3) | Nick Blacklock | 384-7999 |
| | Boise City Public Works | 3 | Jim Hetherington | 384-3900 |
| | Canyon County Assessor | 1(3) | Ted Martin | 454-7279 |
| | Coeur d'Alene Tribe | 4 | Berne Jackson | 686-1800 x218 |
| | Coeur d'Alene Tribal Forestry | 3 | Mike Finity | 686-1315 |
| | Holladay Engineering | 1,1 | Renee Bettis | 642-3304 |
| | Idaho Power Company | 5(6) | Frank Mynar | 388-2977 |
| | Idaho (State Agencies) | | | |
| | Archeological Survey of Idaho | 1 | Leo Flynn | 885-6123 |
| | Dept. of Fish & Game | 2,2 | Bart Butterfield | 334-2772 |
| | Dept. of Lands | 3,3,3,2,1,1 | Dave Gruenhagen | 334-0277 |
| | Dept. of Water Resources | 2,2,2,2,2,2, 2,2,2,2,2,2 | Tony Morse | 327-7997 |
| | Division of Environmental Quality | 2,1,1 | John Courtright | 373-0271 |
| | Military Division | 2,2 | Nick Nydegger | 422-4182 |
| | State Tax Commission | 5,5,5 | Joe Bucher | 334-7750 |
| | Kootenai County Planning & Zoning | 1,1 | Kathryn Printz | 666-8268 |
| | Lockheed Martin Idaho Tech. Co. Inc. | | | |
| | INEEL Computer Services | 2(3) | Pam Johnson | 526-9379 |
| | INEEL Spatial Analysis Laboratory | 4,3(13) | Luke White | 526-1036 |
| | Morrison Knudsen | 2(3),1 | Chris Clay | 386-5720 |
| | Nez Perce Tribe | 3,3 | Jack Bell | 843-7392 |
| | Peregrine Fund | 1,1 | Richard Watson | 362-3716 |
| | Pocatello City | 3 | Dennis Hill | 234-6230 |
| | Potlatch | 3,2(3),2(3), 2(3),2,2,2,2 2,2 | Dennis Murphy | 799-1156 |
| | POWER Engineers/GGI | 2,1,3 | Robb Dye | 378-6316 |
| | Spatial Dynamics | 3,3,3,3,3,3 | Kim Johnson | 345-6788 |
| | Teton GIS | | Julie Brizzee | 525-8369 |
| | United Water Idaho | 2 | Doug Stone | 362-7359 |

*1 - PC License
2 - Workstation License or Node Lock
3 - Multiuse License
4 - Terminal Access to Multiuser System
5 - Windows NT

| LICENSE SYSTEM | COMPANY/AGENCY | TYPE* | CONTACT | PHONE NUMBER |
|---|---|---|---|---|
| **ARC/INFO** | United States (Federal Agencies) | | | |
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| | (State Office and all District offices) | 3,4 | Bill Yeager | 373-3965 |
| | Bureau of Reclamation | 3,3 | Mike Beaty | 378-5172 |
| | Forest Service | | | |
| | Forest Science Lab | 3,2,1 | Mike Radko | 373-4342 |
| | Forest Health Protection | 2,1 | Dick Halsey | 373-4267 |
| | Intermountain Research Station | 1 | Terri Jain | 883-2331 |
| | Boise National Forest | | Joe Frost, Bill Rush | 373-4203 |
| | Caribou National Forest | 3,3 | Paul Oaks | 236-7577 |
| | Payette National Forest | 2,1 | Mickey Pillers | 634-0781 |
| | Targhee National Forest | 3,3 | David Betz | 624-3151 |
| | Natural Resources | | | |
| | Conservation Service | 3,1 | David Hoover | 378-5785 |
| | U.S. Geological Service | | | |
| | Biological Resources Division | 3 | Tom Zarriello | 385-4800 |
| | U.S. Geological Survey-WRD | 2,2,2,2,2 | Steve Garcia | 387-1331 |
| | | 2,2,2 | Molly Maupin | 387-1307 |
| | University of Idaho (Site Licensed) | | | |
| | Agriculture | 1 | Larry Lass | 885-7802 |
| | Agriculture Research Ctr-Kimberly | 4 | Clarence Robison | 423-6610 |
| | Anthropology | 1 | Leo Flynn | 885-6123 |
| | Capital Planning | 3 | Sylvia Ferrin | 885-7100 |
| | Environmental Science | | Margrit Von Braun | 885-6113 |
| | Forestry | 2(6), 4(3),1(3) | Liza Fox | 885-5779 |
| | Geography | 5(2), 4 (20) | Karl Chang | 885-6240 |
| | Landscape Architecture | 2 | Toru Otawa | 885-7729 |
| | Library | 1,1,1 | Dennis Baird | 885-7552 |
| **ARC/CAD** | Boise City Airport | | Sandi Samson | 383-3110 |
| | United Water Idaho | | Doug Stone | 362-7359 |
| **MOSS** | Bureau of Land Management | 4,3 | Bill Yeager | 373-3965 |
| **GRASS** | Bureau of Land Management | 2 | Mike Candelaria | 373-3966 |
| | Natural Resources Conservation Svc. | 2,2 | David Hoover | 378-5785 |
| | Idaho Military Division | 2 | Nick Nydegger | 422-4182 |
| | U.S. Geological Survey Biological Resources Division | 2 | Tom Zariello | 331-5204 |

* 1 - PC License 2 - Workstation License or Node Lock 3 - Multiuse License 4 - Terminal Access to Multiuser System 5 - Windows NT

*[Editor's Note] This is not a list of <u>all</u> GIS users in Idaho. The expansion of GIS technology and its availability is fostering the growth of the number of GIS users. There are also frequent changes in personnel and telephone numbers. If your agency was omitted from this list, the omission was unintentional. To notify IGIAC that your agency should be included in the future, contact Hal Anderson at the Idaho Department of Water Resources, 1301 N. Orchard, Boise, Idaho 83706.*

**APPENDIX A -EXECUTIVE ORDER 96-24**

**THE OFFICE OF THE GOVERNOR**
**EXECUTIVE DEPARTMENT**
**STATE OF IDAHO**
**BOISE**

**EXECUTIVE ORDER NO. 96-24**

**IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITEE**
**AND GEOGRAPHIC INFORMATION CENTER**

**REPEALING AND REPLACING EXECUTIVE ORDER NO. 92-24**

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**WHEREAS, it is in the interest of the state of Idaho, federal resource management agencies, local government, and private organizations to address resource management issues; and**

**WHEREAS, various geographic information activities--such as remote sensing, digital cartography, global positioning systems, and geographic information systems--are basic to sound resource management; and**

**WHEREAS, it is important to minimize duplication and maximize utilization of state and federal funds expended on these activities; and**

**WHEREAS, it is important to officially, efficiently, and accurately communicate to the federal government Idaho's geographic information priorities; and**

**WHEREAS, the state's geographic information community has an increasing need to keep abreast of the rapidly changing technology in mapping and related disciplines; and**

**WHEREAS, it is important to provide channels of communication and cooperation among agencies of the state of Idaho, federal resource management agencies, local government, and private organizations; and**

**WHEREAS, is essential the state of Idaho establish and maintain standards relating to the creation, maintenance, and analysis of geographic information; and**

**WHEREAS, it is necessary on occasion for the state to provide operational support to users of geographic information; and**

**WHEREAS, the Department of Water Resources has developed the capability within the Geographic Information Center to provide such support; and**

**WHEREAS, it is in the interest of the state of Idaho that this capability be shared and further developed in cooperation with federal resource management agencies, local government, and private organizations for conducting needed resource inventory and mapping;**

**NOW, THEREFORE, I, PHILIP E. BATT, Governor of the state of Idaho, by the authority vested in me by the Constitution and laws of the state of Idaho, do hereby order:**

**1. The continuation of the Idaho Geographic Information Advisory Committee. The membership of the Idaho Geographic Information Advisory Committee shall consist of the heads, or their designees, of state departments and agencies with responsibilities in the natural and resource and planning fields that have an interest in geographic information. Agencies represented shall include the departments of Fish and Game, Health and Welfare (Division of Environmental Quality, Lands, Parks and Recreation, Transportation, and Water Resources, as well as the Tax Commission and the Division of Financial Management. All state members of the Committee shall have the right to vote. The voting members of the Committee shall elect one of their number to serve as Chair of the Committee. The Committee may approve voting membership in the Committee by other state agencies that might have natural resource, planning, or geographical information responsibilities or expertise. The Idaho Geographic Information Advisory Committee shall also include non-voting members from organizations the state membership feels could benefit the functioning of the Committee, such as federal agencies operating in Idaho, local governments, Idaho industry associations, and/or state academic institutions that have responsibilities or expertise in the fields of natural**

**resources, planning, or geographic information.**

**2. The responsibilities of the Idaho Geographic Information Advisory Committee shall be to:**

**(a) report to the Information Technology Resource Management Council and advise the Governor on geographical information issues, including the need for standards or enunciation of operational and planning policy for the State;**

**(b) promote establishment and development of a centralized and coordinated clearing-house for the collection, cataloging, and dissemination of remote sensing data and digital geographical information;**

**(c) review new geographic information, mapping, global positioning systems, and remote sensing technology applications that might be utilized to benefit the state's interests, and assess the geographic information system and image-processing capabilities needed within Idaho by existing and potential users;**

**(d) make recommendations to state and federal agencies regarding state policies and standards on geographic information systems, mapping programs, global positioning systems, and remote sensing specifications;**

**(e) assist in the preparation of requests to appropriate federal agencies as a part of the diversified national mapping program; and**

**(f) meet at least annually to review geographic information programs carried on by federal, state and local government agencies, and private industry, develop a list of priorities with regard thereof, and make recommendations for cooperation and resource sharing.**

**3. The Idaho Geographic Information Advisory Committee shall appoint such standing committees as might be necessary to address current geographic information issues.**

**4. The Idaho Geographic Information Advisory Committee shall submit an annual report to the Information Technology Resource Management Council about Committee activities subsequent to the annual meeting.**

**5. The Director of the Department of Water Resources, managing the Idaho Geographic Information Center in accordance with the geographic information policy of the Idaho Geographic Information Advisory Committee, shall have the Idaho Geographical Information Center:**

**(a) provide necessary coordination and technical support to state agencies and other organizations including existing geospatial programs within the departments of Lands, Transportation, Tax, Fish and Game and the Division of Environmental Quality;**

**(b) promote the operational applications of digital image analysis and geographic information systems;**

**(c) provide systems management support to ensure the proper operation and availability of digital geographically-referenced data for applications by various users;**

**(d) provide technical assistance, in the form of consultation and training to allow and encourage application of digital mapping techniques and equipment by employees of other agencies and organizations;**

**(e) cooperate with, receive, and expend funds from other sources for the continued development and utilization of image and geographic information techniques;**

**(f) maintain an assessment of the geographic information systems and image processing capabilities needed within Idaho by existing and potential users, to cooperate with Idaho universities and other research institutions for the development and implementation of improved capabilities resulting from research activities;**

**(g) coordinate and cooperate with the State Information Resource Managment Council (ITRMC);**

**(h) as resources permit, provide support to Idaho Geographic Information Advisory Committee and Information Technology Resource Management Committee, including the establishment and development of a centrally coordinated, spatial data clearing-house.**

**This Executive Order repeals and replaces Executive Order No. 92-24. This Executive Order shall cease to be effective four years after its entry into force.**

**IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Idaho at the Capitol in Boise on this twenty-second day of November in the year of our Lord nineteen hundred ninety-six and of the Independence of the United States of America the two hundred twenty-first and of the Statehood of Idaho the one hundred seventh.**

**_____**
**PHILIP E. BATT**
**GOVERNOR**

**_____**
**PETE T. CENARRUSA**
**SECRETARY OF STATE**

## APPENDIX B

### 1996 IGIAC MAPPING SURVEY

YOUR ORGANIZATION

1. Parent Agency/Business: _____
2. Title of the Mapping Office/Department: _____
3. Office Address: _____
4. City: _____ State: _____ Zip: _____
5. Office Phone: _____
6. Office Fax: _____
7. Contact Person: _____
8. Title: _____
9. Primary Function of the Mapping Staff:_____
   _____
   _____
10. Number of Staff Mapping and/or Supporting Mapping: _____
11. Geographic Area of Interest (for example, City, County, State level): _____
    _____

**AUTOMATION**

12. Are you using computers? yes / no (if no, please skip to question 20.)
13. Approximately what percent of your mapping is done in computer format? _____
14. Which Data Base Management System do you use (for example Dbase, Oracle, Ingres)
    _____
15. Is this data available outside of your organization? yes / no
    If available, how is it distributed: _____
16. What types of software do you use?
    Computer Assisted Drawing (CAD):_____ PC Geographic Information System:____
    Coordinate Geometry (COGO):_____ Workstation Geographic Information System:_____
    Image analysis (of digital images):___ Other:_____
17. Name of software:_____
18. Do you generate new digital data? yes / no If yes what type of documentation is included:
    _____
19. How many computers do you use in mapping?
    PC:_____ Macintosh:_____ Workstation:_____ Other:_____20. Do you plan to automate or upgrade your mapping? yes / no
21. If so, how and when? _____

**TRAINING AND ASSISTANCE**

22. Are your staff/coworkers members of a mapping group? national / state / local
23. Do your staff/coworkers have training available to them? yes / no
24. If so, who does the training? _____
25. What assistance would help you with your mapping? _____
    _____
26. Additional comments: _____
    _____

27. Do you want help with metadata?:
    Yes:____
    No:_____

**MAP PRODUCTION AND MAINTENANCE**

28. **Map Product 1** Title: _____
29. Primary subjects (circle): Hydrography (water features) Elevation Urban / County Roads and trails Railroads Cadastral data (township/range/section) Geodetic control Other:_____
30. Scale: _____ Projection:_____ Source Date:_____
31. Type: computer graphic / computer graphic with associated data / ink on Mylar / ink or pencil on paper / other:_____
32. Approximate number of maps of this type: _____
33. Approximate area covered by each map: _____
34. Sources of information: field surveys / aerial photos / other maps / deeds / other
35. Outside users of these maps? _____
    _____
36. **Map Product 2** Title: _____
37. Primary subjects (circle): Hydrography (water features) Elevation Urban / County Roads and trails Railroads Cadastral data (township/range/section) Geodetic control Other:_____
38. Scale: _____ Projection:_____ Source Date:_____
39. Type: computer graphic / computer graphic with associated data / ink on Mylar / ink or pencil on paper
40. Approximate number of maps of this type: _____
41. Approximate area covered by each map: _____
42. Sources of information: field surveys / aerial photos / other maps / deeds / other
43. Outside users of these maps? _____
    _____

## Aerial Photograph Production and Use

**44. Photo Product 1** **Name:** _____
**45. Scale:** _____
**46. Color: black and white / natural color / color infrared**
**47. Type: contact print / transparency / enlargement / orthophoto (OQ) / digital OQ**
**48. Year:** _____ **47. Source:** _____
**49. Plan to re-acquire? yes / no If yes, when?** _____
**50. Photo Product 2** **Name:** _____
**51. Scale:** _____
**52. Color: black and white / natural color / color infrared**
**53. Type: contact print / transparency / enlargement / orthophoto (OQ) / digital OQ**
**54. Year:** _____ **54. Source:** _____
**55. Plan to re-acquire? yes / no If yes, when?** _____

**(Please photocopy this page if you need additional pages)**

**APPENDIX C**

**LIST OF 1996 IGIAC ANNUAL CONFERENCE ATTENDEES**

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## APPENDIX D

## RESPONSES TO THE 1996 IGIAC ANNUAL CONFERENCE PANEL DISCUSSION

**1. What methodologies, organizational structure and resources would we see that would meet our data distribution and archive needs (two years into the future?**

Distribution & Archive Needs

Central Repository (somebody in charge - staff - new agency?)
Completed Metadata
Web Based
Organizational Responsibility
Shared Spatial Data Base Engineering
Strong Volunteer Spirit
Central Index
Standardized Naming Convention
Single Addition Versions of Data
Continuous Funding Source *(high priority)
Any Funding
Committed Personal
Somebody in Charge
Access Other than Web Based
A Plan
Minimum Training Requirements - placing data, accuracy of data
Standardized Data Sets
Lobbying & Fund Raising Committee
Universal Participation
Accommodation of Differing Levels of User Sophistication
Regular Updates
Standardized System for Updates - bottom up
Defined Responsibilities Regarding Updates
Standards of Accuracy and Quality
Review of New Technologies
Annual Assessment of Needs and Capabilities
News Release or Information Bulletin
Continuing Education
Education Plan
    Community Outreach
    Take Mapping Knowledge to Smaller Communities - source of funding
Common Shared Base Map
Hardware Requirements for Systems
Fire Walls and Security Protocols
Virtual Repository - can be distributed
Metadata Templates

Digital and Non-digital Information
Data Flowing from Local Government Level
Common Ways to Share Attribute Information
Permanent Feature I.D.

Who Assists?

Legislative Assistance/ITRMC
State Tax Commission
AIC/IAC
Highway Districts
All Stakeholders
Tribes
Private Sector
USGS National Mapping
All State Agencies
University and State Libraries
All Federal Agencies

Other Issues

Needs Assessment
Digital Submittal of Data
What is a Repository?
Funding
Metadata
Central Theme = Standards
Education
Responsibility - need to bee defined - setting standards
Enforcement

**2. What would we like to see in place for the responsibility, development and maintenance of key data sets (two years into the future)?**

What process/structure would facilitate this??

Identification of Data Ownership
State Cartographers Office
Local Governments - Intergovernmental Data Standards Committee
Consistency of Local Data Standards
Permanent Feature I.D.
Embrace Framework Concept
Neutral Management
It has to be Simple
Distributed Virtual System
Division and Specialization of Labor

Process for Vegetation and Ownership of Key Data Sets?

Explore Models in Place

How Do We Develop and Archive and Facilitate Ownership Data?

- Form Committee
- Study
- Go to Entities/Agencies/Governments
- Develop a Process to Deal with Issues
- Determine Interest
- How do we Know Data is Correct
- Develop a Statewide Index
- Provide Education and Base Data
- Develop Partnerships for Key Data Sets

Next Steps

- Get More input
- Sense of What is Ok to Pursue
- INMC Develop a Plan
  - Where
  - Organizational Structure
  - Template for a Plan
- Maybe a Data Model - has to have specifics:
  - Where housed
  - What
  - How should it function - (it is a system design)

## APPENDIX E

## IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE
## GLOBAL POSITION SYSTEM SUBCOMMITTEE
## GUIDELINES FOR RESOURCE GRADE GPS COORDINATE ACCURACY

**Adopted October 12, 1994**
**Version 1.10**

The following guidelines are considered to be the minimum requirements necessary to achieve the specified level of accuracy. Each resource/program specialist will have to determine his or her own Global Position System (GPS) accuracy requirements. In addition the manufacturer's instructions for the specific GPS unit in use should be followed.

I. Terminology

**Base (reference, control) Station:** A GPS receiver set up at a known location.

**CEP (circular error probable):** Statistical measure of accuracy; it implies the probability that 50 percent of the positions obtained will fall within a circle of the specified radius. Generally speaking, the accuracies mentioned below refer to CEP.

> Note: Five meter CEP accuracy at the 50 percent confidence level converts approximately to a circle of nine meter radius at the 90 percent confidence level. This is nearly 30 feet and we are considering horizontal accuracy only. The vertical accuracy of resource grade GPS receivers is up to two times worse than the horizontal accuracy. National Map Accuracy standards require that 90 percent of the points tested on a 1:24,000-scale map should not be in error by more than 40 feet. So, 2-5 meter CEP does meet the National Map Accuracy standards for 1:24,000-scale mapping but not by nearly as much as it first sounds.

**Datum, Geodetic:** A set of constants specifying the coordinate system used for geodetic control, i.e., for calculating coordinates of points on the earth. At least eight constants are needed to form a complete datum: three to specify the location of the origin of the coordinate system, three to specify the orientation of the coordinate system, and two to specify the dimensions of the reference ellipsoid.

**Dilution of Precision (DOP):** A description of the uncertainty in a position fix can be described by several indicators. The more commonly used indicators are as follows:

GDOP Geometric (three position coordinates plus the clock offset in the solution)

PDOP Position (three coordinates)

HDOP Horizontal (two horizontal coordinates)

VDOP Vertical (height only)

TDOP Time (clock offset only)

RDOP Relative (normalized to 60 seconds)

**Ellipsoid:** In geodesy, unless otherwise specified, a mathematical figure formed by revolving an ellipse about its minor axis. It is often used interchangeably with spheroid.

**Ellipsoidal Height (HAE):** The measure of vertical distance above the ellipsoid. Not the same as elevation above sea level. GPS

receivers output position-fix height in the WGS-84 datum.

**Elevation Mask Angle:** That angle below which it is recommended that satellites not be tracked. Normally set to a minimum of 10 degrees to avoid interference problems caused by buildings and trees and multipath errors.

**Multipath:** A term used to describe the effect caused by satellite signals reflecting off surfaces near the GPS receiver. This reflected signal is received along with the original signal and is a major contributor to error in GPS and cannot be corrected by differential correction.

**PDOP (Position Dilution of Precision):** PDOP is an indicator of the satellite's geometry in relation to the user's GPS receiver location. The smaller the number the better the geometry; therefore, the better the position.

**Resource (navigation) grade receiver:** A receiver that uses information in the satellites signal to calculate position. Examples of this type of receiver include the Trimble Pathfinder series, Magellan NAV PRO series and the Ashtech Ranger series.

**Rover (remote) Station:** A GPS receiver set up at an unknown location.

**Selective Availability (SA):** A Department of Defense program to control the accuracy of pseudo-range measurements, whereby the user receives a false pseudo-range which is in error by a controlled amount. Differential GPS techniques can reduce these effects for local applications.

**SEP (spherical error probable):** Statistical measure of accuracy; implies that at least 50 percent of the position fixes will fall within a sphere of the specified radius.

**Survey (Geodetic) grade receiver:** A receiver that uses the satellite's signal itself to calculate position. Examples of this type of receiver include the Trimble 4000 series, Ashtech M-XII series, Wild System 200 series and the Motorola Eagle.

**Three-Dimensional GPS Data (3D Data):** GPS data giving latitude, longitude and height of a point. (A minimum of four satellites must be tracked to obtain 3D Data.)

**Two-Dimensional GPS Data (2D Data):** GPS data giving only latitude and longitude position fixes using an estimated height. Since latitude and longitude are computed based upon the estimated height, the error of the horizontal position can be as much as twice the error in the height. This error is not removed by differential corrections to a base station, so 2D data is inherently more inaccurate than 3D data. (A minimum of three satellites must be tracked to obtain 2D data.)

**User Range Accuracy (URA):** 1) is an indicator that can be used to determine whether or not Selective Availability has been activated. A high URA (30 or above) is a good indicator of SA activation [Trimble], and 2) is a qualitative number showing the range accuracy of each satellite. The lower the number, the better the accuracy (0 indicates best accuracy: 8 or above means questionable accuracy - use at your own risk!) [Ashtech].

II. Definitions of collection methods:

A. **Static Absolute** - Uses only one receiver, accuracy can range from 25 to 100 meters spherical error probable (SEP) depending on the quality of the orbital data. Results are obtained in the field.

B. **Static Relative** - Uses two or more receivers, one of which must be on a position with known geodetic coordinates; accuracy can range from less than one centimeter (cm) to five meters depending upon the equipment used and the length of time on each station. All receivers track the same satellite signals. Resource Grade GPS receivers can obtain accuracies from two to five meters CEP. Requires post processing of data.

C. **Kinematic Absolute** - Uses only one receiver that keeps moving, records positions at a selected rate, accuracy can range from 25 to 100 meters SEP depending on the quality of the orbital data. Results are obtained in the field. This method can be used to obtain a large amount of relatively low- accuracy coordinates by mounting the unit to any moving platform.

D. **Kinematic Relative** - Uses two or more receivers, one of which must be on a position with known geodetic coordinates, (i.e., base or reference) while the other(s) (i.e., rover or remote) move to or along unknown positions. All receivers track the same satellite signals. Accuracy can range from less than one cm to five meters depending on the grade of the receiver, and the procedure used. Resource Grade GPS receivers can obtain accuracies from two to five meters CEP.

1. **Real Time Kinematic.** This method requires the receivers to have a communication link between them. All receivers track the same satellite signals. The results are obtained in the field. A lock on the satellites as well as the communication link must be maintained by the receivers at all times or the data would not be reliable for the positions obtained during the loss of the signals. Accuracy can range from two to five meters CEP.

2. **Low Accuracy Kinematic.** This method is quite similar to the Real Time Kinematic method with the exception of the communication link and the fact that the data collected must be post- processed. This method seems to be the most viable for many LIS related applications; coordinates obtained on corners of the Public Land Survey using this method could be incorporated into the geographic-coordinates database (GCDB). Accuracy can range from 2 to 5 meters CEP.

3. **High Accuracy Kinematic.** This method makes use of survey grade receivers. The important differences between this method and other kinematic methods are, 1) the rover must become stationary at the unknown station for at least three minutes, 2) the rover must occupy every unknown station at least twice, 3) all receivers must maintain continuous lock on at least four satellites, all of which must be the same for each receiver, and 4) if the rover loses lock it must return to the last occupied station and resume data collection. The data collected must be post-processed. Accuracy can range from 1 to 5 cm.

III. Procedures

A. Accuracies of **less than two meters** may be obtained using survey grade GPS equipment. These guidelines are for resource grade GPS equipment and do not intend to cover the more accurate applications.

B. To achieve an accuracy of **one to five meters CEP** the following minimum requirements must be true.

1. Two or more resource grade receivers must be used with either static relative or kinematic relative methods. The receivers must be able to be differentially corrected. Multi-channel receivers with once per second update rate must be used in high dynamic situations, such as data collecting from aircraft or moving vehicle.
2. The roving receiver(s) must be differentially corrected against another receiver (i.e., base), which is on a station, the position of which is known to be accurate to one meter or better.
3. For point positioning, at least three minutes at a one second collection rate (i.e., 180 positions recorded) must be spent on each station, and the PDOP value must remain below six.
4. It is recommended that you re-occupy each unknown point for another three minute observation, or retraverse your route, at a different time period. Another option would be to move the rover to a position with known coordinates once every hour. This would show the level of repeatability in your coordinates relative to the previous observation and give you a better idea of the accuracy of the coordinates.

C. To achieve an accuracy of **less than 25 meters CEP** the following minimum requirements must be true.

1. Only one resource or survey grade receiver is necessary and any autonomous method can be used.
2. Selective Availability (SA), which is a term used by the Defense Department to refer to the period of time when the signals from the satellites will be intentionally degraded, must not be in effect. ****Note**** Check your GPS equipment manual for the specific method recommended by the vendor to determine if SA has been activated. Methods, values, and terminology vary by vendor. The most common term to date is User Range Accuracy (URA). According to the Defense Department

selective availability was reactivated in July of 1991 and will remain in effect until further notice. The level of its effect may change from time to time and anyone attempting to use GPS in autonomous mode should be aware that the accuracy may be different at different times and may change depending on what satellites are being observed. The only safe thing is to assume that when SA is activated you will not get an accuracy better than 100 meters in autonomous mode.

3. PDOP should remain below six.

D. If an accuracy of no better than **100 meters** is all that is desired, the following minimum requirements must be true.

Any resource or survey grade GPS unit used in any of the methods listed in section I. above.

The accuracies indicated above refer to a Circular Error Probable (CEP) which indicates that at least 50 percent of the coordinates obtained will fall within a circle of that radius 50 percent of the coordinates will fall outside that circle. For instance, if you set on a station for three minutes and your receiver gets a reading every second then at least 90 of the coordinates for that station will be within the circle. In addition, CEP refers to horizontal or two dimensional accuracy only. See discussion under CEP in definitions above.

IV. Final Product

In addition to the above requirements, the following information about the coordinate values must be recorded.

A. Which horizontal datum are the values recorded in:

1. NAD27 - North American Datum of 1927. Most information, including USGS topographic maps, are based on this datum.
2. NAD83 - North American Datum of 1983. GPS is actually using the World Geodetic System of 1984 (WGS84). There is very little difference between NAD83 and WGS84, and for the purpose of resource grade GPS and most survey grade GPS projects, the WGS84 values can be used directly as NAD83 values.

Software is available to convert (or transform) from one datum to another. The accuracy of these conversions varies with the amount of control available and the conversion program used. The difference between datums can be as high as 300 meters. Some GPS units come with conversion software, but be careful when using this software as it is usually based on a very large area and can degrade the accuracy of your coordinates. A transformation program put out by the National Geodetic Survey (NGS) called "NADCON" or one based on this program put out by the U.S. Army Corps of Engineers called "CORPSCON" is recommended and is available through NGS.

B. Which vertical datum, if any, are the elevations recorded in:

1. NGVD 29 - National Geodetic Vertical Datum of 1929.
2. NAVD 88 - North American Vertical Datum of 1988.

C. What Geoid Modeling Software was used if elevations are given:

1. Vendor supplied. (Which Vendor?)
2. Geoid 93 or Geoid 90, obtained from NGS.

D. What format are the coordinates in:

1. LATITUDE AND LONGITUDE - This can be either NAD27 or NAD83. Coordinates should be in degrees, minutes, seconds, and decimal of seconds. If not, please specify.
2. UTM - Universal Transverse Mercator Coordinates should be in meters. If not, specify the units.
3. SPC - State Plane Coordinates. State Plane coordinates are reported on the NAD83 datum in meters. If not, specify the

units.
4. IDTM - Idaho Transverse Mercator. Meters are to be used for both NAD27 and NAD83 datums.

**APPENDIX E-1**

## GPS COORDINATE RECORDATION FORM

NAME OF OPERATOR: _____ DATE: _____ PROJECT: _____

COMPANY NAME: _____ COUNTY: _____ DESCRIPTION of PROJECT: _____

_____

HORIZONTAL COORDINATE OF POINT (Attach list if appropriate): _____ VERTICAL COORDINATE OF POINT (Specify HAE or MSL): _____ NAME AND MODEL OF RECEIVER: _____

_____

POST PROCESSING SOFTWARE AND VERSION: _____ TRANSFORMATION SOFTWARE AND VERSION: _____

GEOID MODELING SOFTWARE AND VERSION: _____

NAME(s) OF CONTROL or BASE STATION(s) USED (Provide NAD 83 values):

#1_____ LAT: ___° ___' ___." LONG: ___° ___' ___." HAE:_____ MSL:_____

#2_____ LAT: ___° ___' ___." LONG: ___° ___' ___." HAE:_____ MSL:_____

#3_____ LAT: ___° ___' ___." LONG: ___° ___' ___." HAE:_____ MSL:_____

| HORIZONTAL DATUM | VERTICAL DATUM | FORMAT | METHOD | PLATFORM | TIME | RELIABILITY |
|---|---|---|---|---|---|---|
| 1. NAD27 | 1. NGVD 29 | 1. LAT & LONG | 1. STATIC AUTONOMOUS | A. AIRBORNE VEHICLE | A. AUTONOMOUS | 1. < 2 METERS |
| 2. NAD83 | 2. NAVD 88 | 2. UTM | 2. STATIC RELATIVE | L. LAND VEHICLE | B. POST PROCESSED | 2. 2-5 METERS |
| | 3. N/A (HAE) | 3. SPC | 3. KINEMATIC AUTONOMOUS | M. MARINE VEHICLE | C. REAL TIME COMM LINK | 3. < 25 METERS |
| | | 4. IDTM | 4. KINEMATIC RELATIVE | P. PORTABLE | | 4. ± 100 METERS |
| CODE: _ | _ | _ | _ | _ | _ | _ |

EXAMPLE CODE:

| 1 | 1 | 1 | 2 | P | B | 2 |
|---|---|---|---|---|---|---|
| NAD27 | NGVD 29 | LAT & LONG | STATIC RELATIVE | PORTABLE | POST PROCESSED | 2-5 METERS |

## APPENDIX F

## USGS INTERNET ADDRESSES
## PRODUCT INFORMATION AND SOFTWARE TOOLS

Global Land Information System (GLIS) Search Database
http://edcwww.cr.usgs.gov/glis/glis.html

USGS Geospatial Data, Information, and Related Products
http://www-nmd.usgs.gov/www/products/1product.html

USGS Data available on-line in SDTS format
http://mcmcweb.er.usgs.gov/sdts/data.html

Data Standards:
DEM
ftp://mapping.usgs.gov/pub/ti/DEM/demstnds/

DLG
ftp://mapping.usgs.gov/pub/ti/DLG/dlgstnds/

DRG
ftp://mapping.usgs.gov/pub/ti/DRG/drgstnds/

DOQ
ftp://mapping-usgs-gov/pub/ti/DOQ/doqstnds/

USGS Data Summary and Background Information:
DLG
http://edcwww.cr.usgs.gov/glis/hyper/guide/usgs_dlg

DOQ
http://edcwww.cr.usgs.gov/glis/hyper/guide/usgs_doq

DEM
http://edcwww.cr.usgs-gov/glis/hyper/guide/usgs_dem

EROS Data Center Large Scale DLG Download Information
http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/ndcdb.html#LRG

DRG Product Information and Online Status Graphic
http://mcmcweb.er.usgs.gov/drg

DRG Map Collar Clipping Routines
ftp ftpmcmc.cr.usgs.gov
cd /release/drg/clip

DRG-DEM-DOQ Merging Software
ftp ftpmcmc.er.usgs.gov
cd /release/drg/merge/dgux

USGS tools for converting USGS data into Arc/Info readable format
http://rmmcweb.cr.usgs.gov/~dcatts/software

National Hydrography Data Set
http://nhd.fgdc.gov

## APPENDIX G

## IGIAC POLICY ON PLANE COORDINATE SYSTEM FOR STATEWIDE GEOGRAPHIC INFORMATION SYSTEMS

**Adopted October 12, 1994**

As digital data for Idaho becomes increasingly available, there are more frequent opportunity and need to use these data for GIS analysis and applications that cover the entire state. Digitized map data from the U.S. Geological Survey and other federal sources often are furnished in the Universal Transverse Mercator (UTM) coordinate system. This system splits Idaho into two zones, making it necessary to reproject data into a common system for statewide coverage. If one of the existing UTM zones is selected, excessive distortion and scale error can adversely affect results of GIS analysis. Other existing coordinate systems for the state also present this problem.

A coordinate systems tailored to Idaho is needed for applications that cover the entire state, to provide acceptable accuracies without excessive distortion, and to permit 0.1 meter resolution in single precision with no more than seven digits. The Idaho Transverse Mercator coordinate system (IDTM) is designed to meet this requirements (Gem State Surveyor, Winter 1993).

The IDTM is hereby adopted by IGIAC as acceptable and preferred for statewide GIS use.

Technical parameters of this system are:

1. Measurement unit: Meter
2. Central Meridian: 114 degrees West Longitude
3. Central Meridian scale factor: 0.9996
4. Horizontal Datum: NAD 1927 (until NAD '83 is adopted)
5. Latitude of Origin: 42 degrees North
6. False Northing at origin: 100,000 m
7. False Easting at origin: 500,000 m

## APPENDIX H

## STATE OF IDAHO
## POLICY STATEMENT FOR
## GEOGRAPHIC INFORMATION SYSTEMS

Background

In the past decade, governmental agencies and private industry have developed increasingly powerful computer systems designed to process and analyze map information. Collectively called geographic information systems (GIS), these systems have the potential to significantly increase efficiency and reduce costs to the state for conducting land, water, demographic, and other resource management activities.

GIS technology, much like the computer field in general, is in a period of dynamic evolution and growth. Moreover, GIS technology is but one of a number of related technologies (e.g., remote sensing and digital cartography) that could assist state agencies in carrying out their mandated responsibilities more efficiently. Indeed, these technologies are becoming ever more closely linked and are part of the information management activities of Idaho. Within this framework, it is imperative that emphasis be placed on coordination between the departmental organizations currently using or planning to use these technologies. This coordination will facilitate exchange of data between agencies.

Objectives

A. Encourage and assist in the development, implementation and use of geographic information systems to meet current and future statewide and departmental missions and objectives.

B. Establish an effective management and support framework for the orderly growth of geographic information system technology within the state.

C. Achieve and maintain levels of hardware, software and data compatibility in accordance with state standards and promote the sharing of technology, research, applications and data resources throughout the State of Idaho.

D. Encourage cooperative work among state agencies, universities, federal agencies and private associations to test, demonstrate and complete cooperative projects within their mandated responsibilities.

E. Coordinate development of statewide information predicated upon agencies implementing their own geographic information systems.

F. Develop a central catalog of geographic information for current and future agency and statewide applications.

Policies

It is the policy of the State of Idaho to encourage the utilization of geographic information systems when such use enhances the overall cost-effectiveness of administrative functions or improves productivity. It is also the state's policy to acquire and support geographic information systems through well-planned implementation strategies. These strategies include:

A. Develop and maintain data standards for base category data, statewide exchange data and, as needed, project data.

B. Develop and maintain contracts for state agency use covering the purchase of geographic information systems software and hardware.

Management and Organizational Responsibilities

A. The Idaho Geographic Information Advisory Committee (formerly the Idaho Mapping Advisory Committee) will be responsible for developing data standards for geographic information systems.

B. The IGIAC will be responsible for the development of specifications for the contract purchasing of geographic information systems hardware and software in conjunction with the state purchasing agent and the state data processing coordinator.

C. The acquisition and application of geographic information systems hardware and software will be accomplished in accordance with each agency's approved automated data processing plan.

D. The IGIAC will establish a standing GIS subcommittee to accomplish the following:

1. Hold quarterly meetings for information exchange and work status review. Identify opportunities for exchange of data, joint production of data or the contracting of work between state agencies.

2. Review needs for geographic information and determine data categories necessary for statewide applications. Establish and maintain an inventory of each category's collection status.

3. Provide GIS informational and educational opportunities as needed.

4. Work with agencies to implement the objectives of this policy.